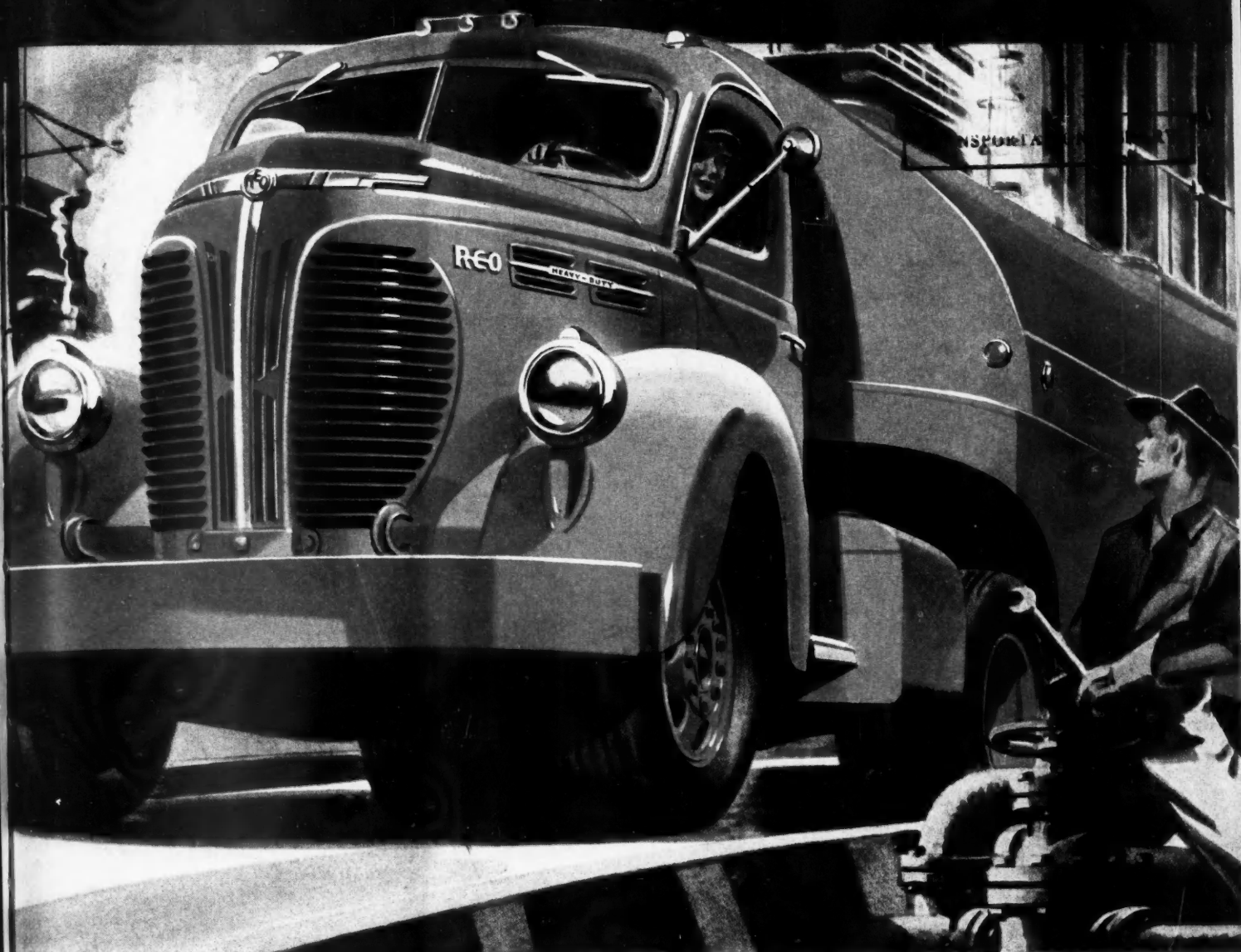


COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS
SEPTEMBER 1947



Reo is built for the tough jobs

There are no tougher jobs than in the petroleum industry. In its field operations, in bulk distribution of gasoline, in local deliveries, Reo equipment is setting the pace today. The massive cold-riveted frames and heavy-duty construction in every chassis part guarantee high capacity, extra-long life. The dependable, precision-built engines provide speed and lugging power to

maintain timetable schedules. Because they're built to stay out of the shop and on the job, Reo trucks and tractors are going places. Particularly impressive is Reo's standing with the highway carriers; here profits depend entirely on transportation economy—which Reo certainly delivers. There's a dealer, distributor or factory branch nearby. REO MOTORS, INC., Lansing 20, Mich.

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REO

1904 • AMERICA'S TOUGHEST TRUCK • 1947

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...to fit YOUR job, save YOU money!

Take a good look at this truck! It's a "Job-Rated" truck—a truck built to FIT a specific hauling job.

This truck has "Job-Rated" power—the right one of seven great Dodge truck engines for pulling its load . . . dependably, and *economically*.

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To get such a dependable and economical truck—simply explain your hauling problems in detail to your Dodge dealer. He will select the right Dodge "Job-Rated" truck for YOUR job.

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DODGE
"Job-Rated" TRUCKS

Fit the Job . . . Last Longer !

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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When you throw
ROCKS
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St. Paul
HYDRAULIC

ONE LOOK at this unit tells you it has seen plenty of rough treatment. The size of the rocks being handled, the caved in hood, all the details speak for themselves... especially when compared with the smaller photo, taken when the truck was new.

Winston Bros., Contractors, are using 6 trucks like this one on a railway relocating job near Williams-ville, Missouri.

The 5 cu. yd. St. Paul Rock Body is made of 1/4" plate with wrap-around I-beams. Body floor is 1/4" plate with 2" oak liner. Hoist is Model 92 St. Paul Hi-Dumper. Most important of all—after 3 years of this kind of service these St. Paul equipped units are STILL ON THE JOB!

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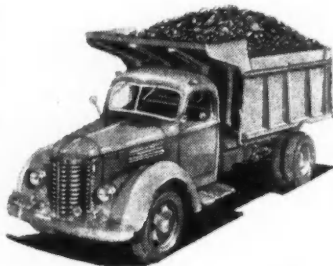
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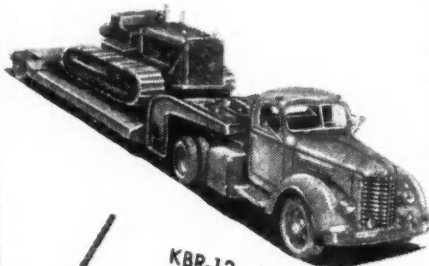
IN FITTING TRUCKS TO EVERY JOB



KB-8—for distribution of bituminous material



KBR-11—for transport of coal.

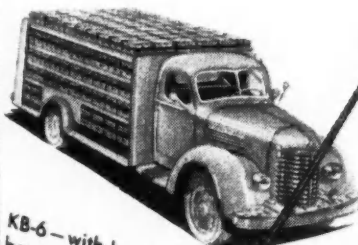


KBR-12—Truck-Tractor—for hauling heavy machinery.

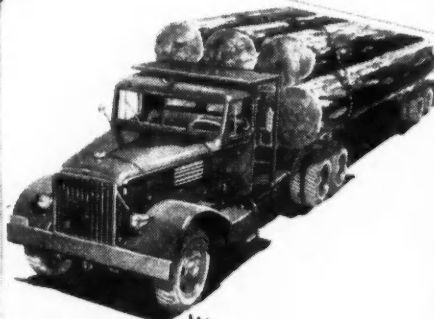
KB-8-F—for mixing and transporting concrete.



THIS EMBLEM IDENTIFIES GREAT TRUCKS



KB-6—with low frame for beverage delivery.



W-6564-OH—Truck-Tractor for heavy log transport.



40TH ANNIVERSARY OF INTERNATIONAL TRUCKS
1907-1947—Forty Years of International Truck
Service to Industry, Commerce and Agriculture



FEW hauling jobs are alike. Trucks must be *specialized*. International Dealers and Branches are specialists in truck hauling problems.

There are 21 basic models in the International Line. Engineers at International's four great truck works are masters at *specializing* these 21 models into more than 1,000 different types of trucks.

That's one reason why, for each of the past 15 years, more new heavy-duty Internationals have been registered by American users than any other make of truck.

Here are two others:

1. The International Truck Point Rating System, which enables International Dealers and Branches to determine the payload that may be economically carried by a given truck in any specific operation.

2. *Specialized* truck service by International Dealers and Branches.

For any truck problem, see your International Dealer or Branch.



INTERNATIONAL HARVESTER COMPANY
100 N. Michigan Ave. Chicago 1, Illinois

INTERNATIONAL Trucks

CCJ READER DIGEST



DO YOU KNOW THE ANSWERS?

Is chrome-plating of wearing parts practical for fleet application? See Page 46.

What is wrong with '47 model trucks according to mechanics? Page 68.

What do fleet operators want in rear view mirrors? See Page 61.

CHECK YOUR KNOWLEDGE . . .

What oil consumption rate should determine need of an engine overhaul? See Page 55.

Can a tachometer be used as a guide to engine service? Page 72.

Is scientific maintenance the answer to current high wages and high prices? See Page 69.

Consider Bonded Brakes

by BART RAWSON, Associate Editor, Commercial Car Journal

BONDED brake linings, the kind that use a plastic adhesive rather than rivets to hold them to the shoes can increase lining life up to 100 per cent because they can be worn all the way down and because they have about 10 per cent more lining area. They are being used by at least two truck manufacturers and by a growing number of brake service facilities.

Possible disadvantages include the cost of an electric oven (at least \$300), size limitations (16 in.), removal of the lining, and cam adjustment. But most manufacturers believe that the advantages far offset the disadvantages. Two companies have announced complete line of bonding equipment while others are close on their heels. Looking to the future, it's a good bet that many fleetmen will find it profitable to swap their old shoes for new ones, considering the equipment cost. See page 34.

Segregated Service Speeds Maintenance

by C. A. NELSON, President, Lyon Van Lines, Inc.

THE KEYNOTE of our new shop layout is fast maintenance and plenty of elbow room. Separate buildings for wash lubrication and tires, scales and general shop are lined up with the terminal on two sides of a giant five-acre lot. Since we are in a warm, sunny climate buildings are neither closed nor heated but they contain just about everything for efficient service from cat walks and a lift in the wash house to a complete chassis dynamometer at the end of the main garage building. In between are complete lubrication and tire repair facilities, a body shop, engine rebuild shop, electrical shop and a large area for general repairs. See page 38.

Souping Up Tractors for Increased Loads

by CLAYTON DAVIS, Maintenance Supt., Kimbel Lines, Inc.

WHEN 60 of our fleet of 80 trailers were replaced by tandems it became an immediate power problem. The ideal solution was new, more powerful tractors, but they were not available. So we decided to explore the realm of increasing power of our present engines. We found it entirely practical to increase displacement, to the next higher power brackets used by the engine manufacturer and we were able to use only standard parts. On some we increased bore, on others stroke, but we found one step-up was the limit. Typical of our successful alterations was an increase from 318 to 360 cu in. This gave us no trouble from cooling system, clutch or rear end and we have now made several such changes. When we get new tractors, we will of course specify the larger equipment.

We also use larger tires using a wheel spacer designed and made in our own shop to gain necessary clearance. Page 62.

Strong Central Control

by B. S. SNOWDEN, Trans. Mgr., General Ice Cream Corp.

IT HAS often been said that centralized control for a widely scattered fleet is impractical. But we have it for a fleet of more than 1400 vehicles operating from 83 widely scattered points. Standardization of vehicles, bodies, equipment and supplies pays off in mass buying power, interchangeability, and fixing of responsibility. We have a very complete but simplified central record system and even build our own ice cream bodies, a process which, together with other details of operation will be described in future articles. See page 44.

Trouble Shooting the Cooling System

by M. K. SIMKINS Technical Editor, Commercial Car Journal

WATER added to a low radiator may not appear to cost much in terms of dollars and cents, but the increased engine wear, lowered efficiency and engine failures resulting from low and inadequate cooling systems send operating expenses to formidable heights, according to the author.

The driver himself can do much to guard against cooling system troubles. He will check the condition of the coolant daily. He will watch the temperature gage and the coolant level and report abnormal conditions. Water loss is the first indication of trouble.

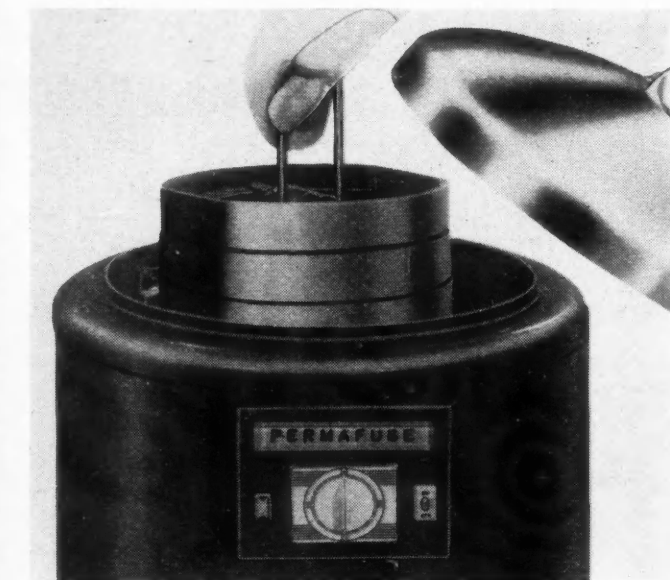
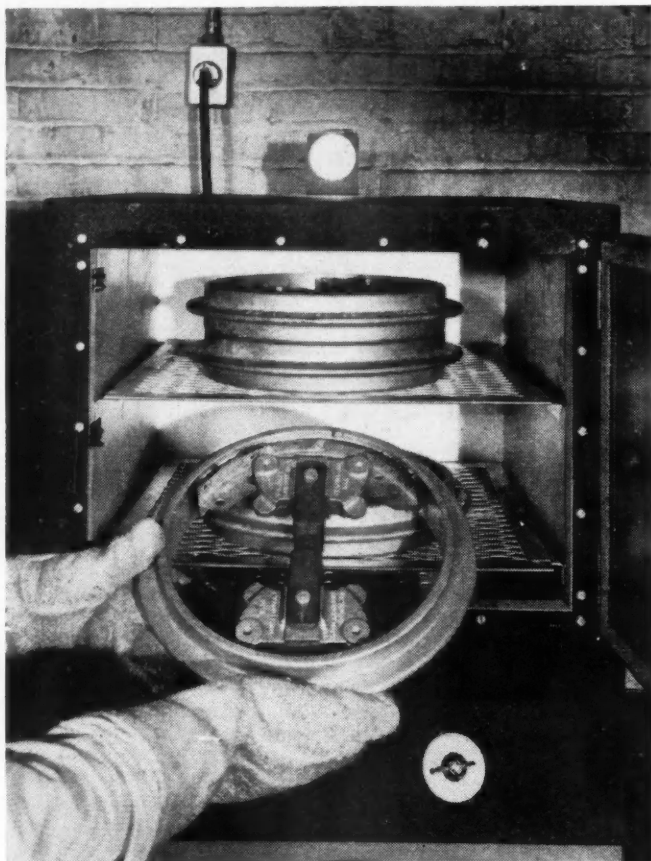
Common failures result from external and internal leakage, afterboil, overheating due to restricted circulation, corrosion of the system and overcooling. The author's recommendations with regard to running down such failures and eliminating their recurrence are outlined in this article, the eleventh in a series of trouble shooting stories prepared to help the fleetman improve the performance of his vehicle. See Page 57.

How to Calculate Hp Requirements

THIS is Step 2 in the series entitled "Correct Application of Motor Trucks," the first part, Step 1, having been published in the August issue.

Step 2 tells why horsepower, rather than engine torque or engine cylinder displacement, is used as the basis for selecting an engine. This is followed by an explanation as to why performance standards of each fleet should serve as a guide to engine selection. Two basic performance standards are offered as a guide to the selection of the correct truck units for each trucking job under normal conditions, conditions other than normal, as well as for highly special applications. Specific examples and calculations are given for each condition. Methods include formulas and use of a special slide rule.

Finally, the text leads to choice of an engine from manufacturers specifications. See page 49.



Permafuse oven features side-wall heating, automatic controls. Eight-shoe load is inserted through top

Goodyear oven has heating element in base. Spreader, shown in ring assembly, is adjusted with torque wrench



STOP

to Consider

by **BART RAWSON**

Associate Editor,
Commercial Car Journal

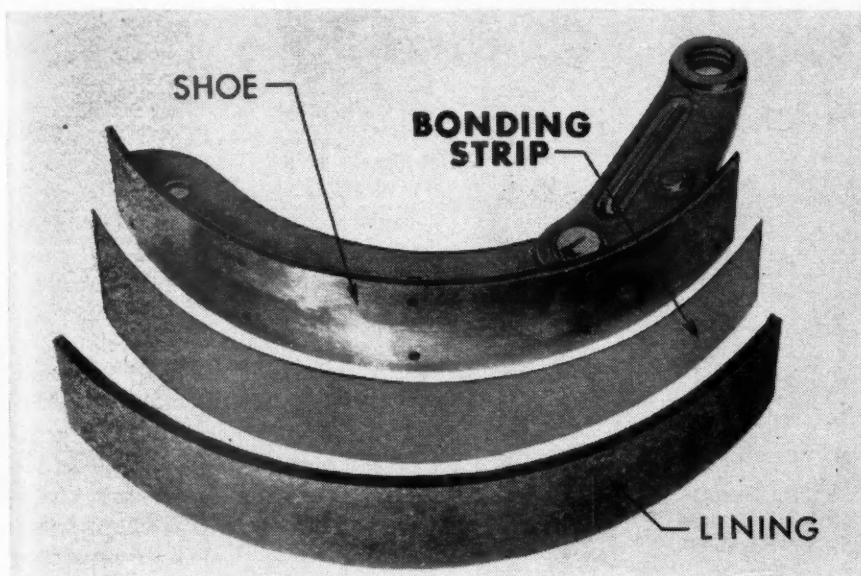
BONDED BRAKE LININGS, the kind that use a plastic adhesive rather than rivets to hold them to the shoes, can increase lining life up to 100 per cent. At least two truck manufacturers are equipping a substantial portion of their current production models, in sizes up to 1 ton, with the bonded lining and one of them is offering bonded lining and shoes on an exchange basis. Persistent rumors indicate that at least two Chrysler-built passenger cars will have them soon. On top of that jobbers and brake specialists, particularly in the greater New York Metropolitan area, have been using the

process with marked success for a number of years and their numbers and volume are increasing as fast as limited production can keep pace.

These facts cannot be ignored despite the justifiable reluctance on the part of manufacturers to plunge into the program on a helter-skelter basis—a reluctance which accounts for the absence of fanfare and publicity which has to date marked the career of this rather revolutionary development. Accordingly, COMMERCIAL CAR JOURNAL probed for the facts and presents them with regard to advantages, drawbacks, current development and future prospects of the art.

Definite Advantages

THERE are two reasons for the tremendously increased mileage obtained from the use of bonded lining. Most important is the fact that the lining may be safely worn all the way down to the thickness of the bonding agent itself—usually about .007 in.—without damage to the drum. This is in sharp contrast to the usual 50 per cent limit necessitated by the presence of the rivet heads. Second is the fact that absence of rivet holes and elimination of the chamfered ends actually increases the lining surface by about 10 per cent. Chamfering is no longer necessary since the bonding material supports the lining all the way to the end rather than stopping an inch or so short as is the case with rivets.



For strip-type bonding, resinoid plastic tape, about .007 in. thick, is supplied in various widths, then cut to fit. Note complete absence of rivet holes and chamfered ends



Liquid bonding agent is supplied in cans, then brushed on. One gallon is enough for 1200 shoes. Most makers supply undrilled sets, one has bonding material already applied

Rivetless lining can increase life span by 100 per cent; bonding equipment is now available for cars and light trucks; future of process is promising

BONDED BRAKES

Omitting the chamfer also has the advantage of pushing grit particles and dirt ahead and away from the lining, rather than wedging them between lining and drum.

Possible Disadvantages

THERE are four possible disadvantages of the bonded brake but subsequent discussions will show that, in our opinion at least, they bear little weight. We mention them only because we believe readers are entitled to both pros and cons.

First is the fact that the bonding process requires an electric oven with a minimum cost to date in the neighborhood of \$300. Yet despite this fact labor time is sufficiently reduced that a large brake specialist organization in New York is offering the bonded relining service on a popular

passenger car at a price exactly comparable to the manufacturer's own authorized dealers' list.

The second problem is of a temporary nature. But to date we have no knowledge of an oven large enough to handle lining of more than 16 in. diameter or $\frac{3}{8}$ in. in thickness. There is no question that such ovens could be made, but to date the demand has not been sufficient to offset manufacturers' backlog of orders for the more popular models. This means that trucks generally above the 2-ton range cannot as yet be handled.

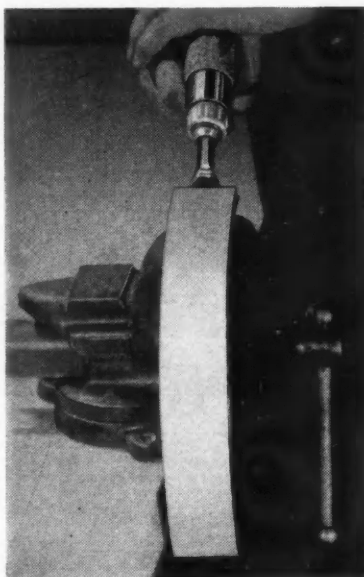
Third is the question of how to get the lining off once it is bonded on. Some manufacturers of bonding equipment supply a small pneumatic hammer for this purpose and claim that removal is no particular prob-

lem. Others, working behind drawn curtains, claim they have a better way of doing it and quite naturally argue that the pneumatic hammer may damage the shoe, that it takes time and is inferior to other means. Since these other processes have not yet been revealed, we cannot argue their merits or drawbacks. But since we have witnessed the removal of several linings by the hammer process we can say that it is usually both quick and easy. The trick is in getting the hammer between the lining and the shoe, then once the removal is started, to so slant the hammer as to exert most of the pressure on the end of the lining. Vibration does the rest and the lining usually peels off with remarkable ease. A buffer takes care of any irregularities.

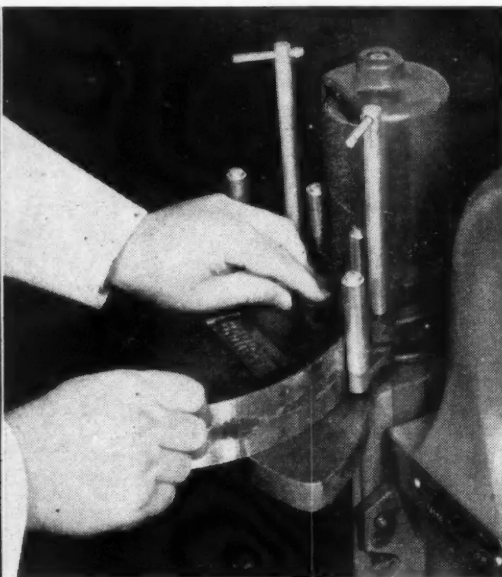
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... BONDED BRAKES

(Continued from page 35)



Small pneumatic chisel is only publicized method for removing bonded lining; others are reported on way



After removal, shoes are burnished on special jig to remove irregularities and polish surface for bonding

The fourth question raised by the skeptics is the matter of cam adjustment. Can conventional brakes be adjusted far enough down to take advantage of the increased lining wear? It's a question fleetmen can best answer by checking their own equipment, but up to now our best research has shown that only certain fleets such as taxicabs where cams have been deliberately ground to prevent adjustment beyond a "safe" margin, is the adjustment problem a factor.

We attempted to probe all concerned on what happens if the lining comes off. Without exception they all replied that the lining does not come off. But a few in answer to our most searching questions admitted that it had happened in a few rarely isolated cases. But then they hastened to add that if it does come off, nothing happens except a clearly recognizable noise in the offending brake. The brake still works!

Equipment Necessary

BONDING equipment generally consists of these principal items:

1. An electrically heated, thermo-

statically-controlled oven capable of holding an even temperature in the close vicinity of 375 deg.

2. A bonding agent of resinoid plastic supplied either in strip or liquid form.

3. A means for applying pressure to hold the lining on the shoe during baking.

4. Tools for the removal of the lining—usually a pneumatic hammer and a grinder or buffer.

5. Miscellaneous equipment such as asbestos gloves, shears, etc.

The descriptions which follow of equipment currently available will serve to illustrate contemporary as well as competitive thinking on the bonding process. The descriptions are based on latest available information from the manufacturers but since the data are more complete in some instances than in others, fleetmen should be careful to draw their own conclusions.

Equipment Available

OLDEST in the bonding field and leader from the standpoint of number of installations to date is the Permafuse Corp. of Brooklyn, N. Y.

Its electrically-heated oven is cylindrical in shape, holds 8 shoes at a time (four complete wheels) and features heating elements in the side which are claimed to give an unusual degree of heat uniformity. For installations where volume of work exceeds the capacity of a single oven, the company recommends a battery of such units with one operator for each three ovens. In this way the operator can load one, unload another while the third is "cooking." The baking takes about thirty minutes.

Each pair of linings and shoes are held in place with spreader jacks working against outside retaining rings. Permafuse uses the strip-type bonding agent, supplying it in rolls of various widths to be cut to proper length in the field. For lining removal a pneumatic hammer is used together with a special sanding drum for burnishing the denuded shoes. All of these items together with complete auxiliary equipment are available in single oven kits with list prices ranging from \$295.00 to approximately \$400.00.

The process developed by the Goodyear Tire & Rubber Co. is basically similar to the Permafuse set-up except for the fact that the bonding agent is furnished in liquid form and is applied to the shoe with a brush. It is said that one gallon of the adhesive, known as Uni-Bond, is sufficient for 1200 shoes. Goodyear's oven is rectangular in shape with the heating element in the bottom and has an 8-shoe capacity. For removal the company recommends the use of a special removing tool now in the process of final development, followed by burnishing on a special brake shoe jig.

It goes without saying that other lining and equipment manufacturers are studying the bonded process. Some of them have their bonding equipment in the final stages of development and have demonstrated their processes to the writer. But unfortunately we are not permitted to reveal details as this issue goes to press. Suffice it to say that the industry's research is paying special attention to the problems of oven size, type of heating, heat distribution, and lining removal. In addition they are keeping a weather eye on the actual moves—not the rumors—of

(TURN TO PAGE 147, PLEASE)

The OVERLOAD

Longer Working Hours Have a Definite Effect on Efficiency

THE Bureau of Labor Statistics has completed a study of the effect of longer hours on worker efficiency that should be of interest to all men in fleet establishments who have the responsibility of getting work done.

Judging by the letters addressed to us from time to time, these men have a job convincing The Man in the Front Office that the shop force, for example, is being worked to a frazzle and that a couple more mechanics would improve shop efficiency. The Front Office too often takes the view that longer hours never hurt anybody or that the overtime paid for such longer hours is a sufficient incentive to keep the worker at peak efficiency.

The Bureau of Labor Statistics' study says it isn't. The study (of long work schedules during the war) indicates that the preference for the 8-hour day and 40-hour week in the nation's manufacturing industries is well-founded. Increases in daily and weekly hours definitely have an adverse effect on efficiency.

It was found that when daily hours were lengthened to 9 or 10, with weekly hours ranging between 50 and 60, every 3 additional hours worked in light work brought about only 2 additional hours of output. In heavy work, when schedules exceeded 48 or 50 hours per week, every 2 additional hours worked yielded only 1 hour's additional output.

Rather than tamper with the efficiency of the 8-hr workday, it would seem to be better to add a sixth day of 8 hours. The study showed that the efficiency of the 40-hr week was maintained quite well when a sixth day of 8 hrs was added. However, when a sixth day is added, be prepared for absenteeism.

Many fleets find it necessary to work their shops on Sunday. The war work



by **GEORGE T. HOOK**
Editor

study showed definitely that Sunday work is not considered desirable and that it results in a high percentage of absenteeism. In one plant output actually was greater during 6 days at 8 hours than during 7 days. Under the longer schedule workers had been paid 8 days' pay for less than 6 days' output.

However, work on alternate Sundays was found to be superior to intermittent and irregular overtime which stretched daily hours to 11 or 12, and occasionally to 15.

Longer hours also have an effect on the insurance rate and on absenteeism due to injuries. The Bureau's study revealed that injuries increased as hours were lengthened. In one plant the injury frequency rate went up by more than 50 per cent when hours were raised from 40 to 48. The same increase was observed in two other plants when hours were increased from 48 to 54 and 54 to 60. In still another plant, an increase in hours from 48 to 60 nearly tripled the injury frequency rate. In most cases, while frequency did increase, it was not quite so sharp.

To some fleet superintendents, shop foremen and service managers these findings will not come as a surprise; they may serve only to corroborate their own experience. To others, they may merely support a suspicion. But in every one it should strengthen a resolve to study his own department a little more carefully, and lay the cards before The Man in the Front Office. In this day of higher wages and higher prices, he must show an interest in every plan for improving shop efficiency.

Fleets Are Famished For Maintenance Help From Manufacturers

THE second annual short course for motor vehicle maintenance supervisors will be given Nov. 3-7 at Pennsylvania State College. This worthy undertaking, still somewhat experimental, reminds us again of the great need that fleets have for educational helps on all phases of truck maintenance.

A good mechanic is a pretty ingenious individual. Left to his own devices he will in time find some sort of solution to any mechanical problem that confronts him. But this is the expensive, time-consuming way of handling maintenance problems. Fleet shops can't afford the experimental manner of making adjustments and repairs. The men in charge of fleet shops are aware of this and are hungry for any form of help that will enable them to do a better supervisory job.

Some manufacturers are aware of this need and are doing something to satisfy the hunger. According to a survey of this subject which this publication is making, shop equipment makers are more alert to the needs of their fleet customers than any other type of manufacturer. The type of schooling they are offering goes beyond mere instruction in the use of their products. They concern themselves intimately with maintenance techniques.

Among parts and accessory makers only a few are providing schooling. These are restricted to brakes, piston rings, and fuel injection. And as for truck manufacturers, only one is doing an organized job of giving truck fleet operators the sort of mechanical instruction they want.

The manner in which manufacturers can and should help fleets with their maintenance problems is a subject that should be explored by fleets and factories at the earliest possible moment.

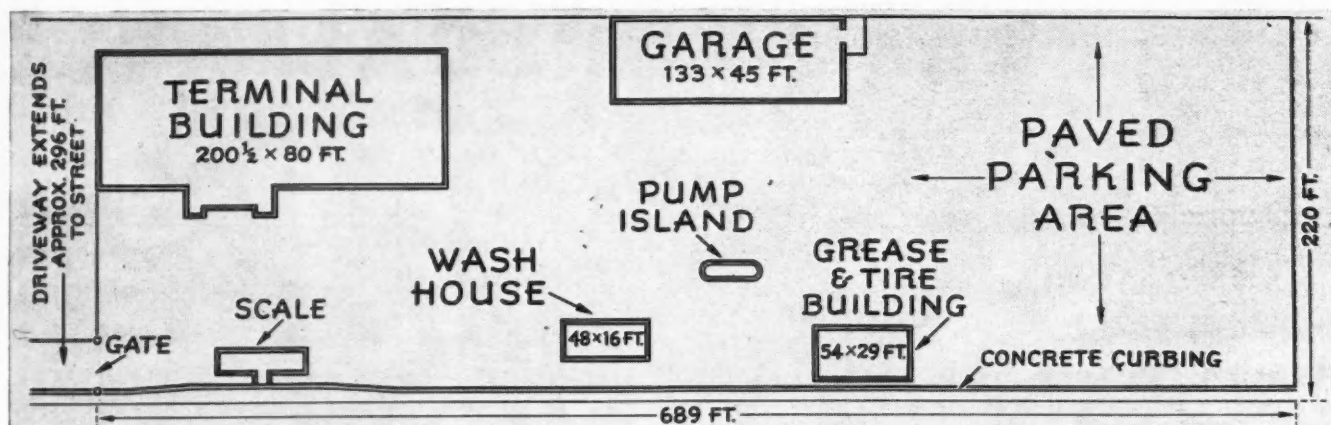
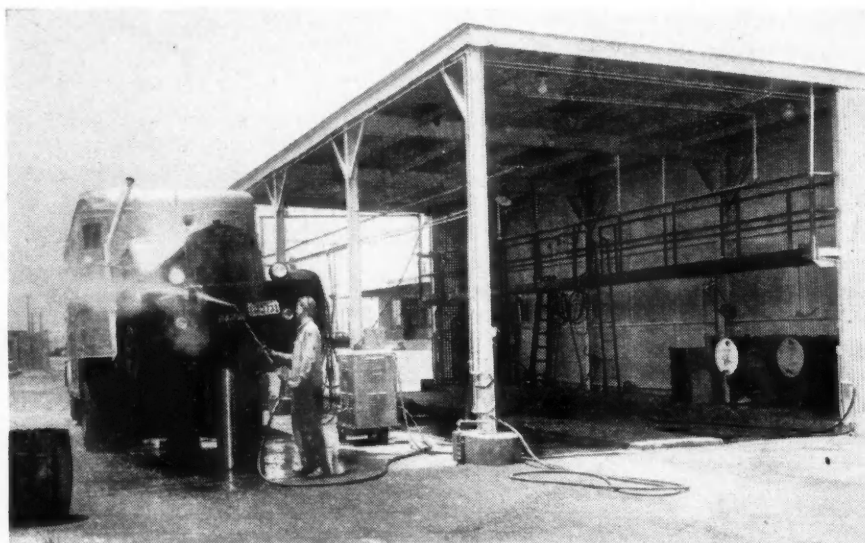


Fig. 1. Most unusual feature of Lyon's service set-up is segregation of major activities into separate buildings, widely spaced on 689 x 220 ft lot

Fig. 2. Wash house has built-in cat-walk, shampoo and spray pipes. Lift and steam cleaner are located outside



Segregated Service Speeds

by **CHESTER A. NELSON**

President, Lyon Van Lines, Inc.
Los Angeles, Cal.

Three separate service buildings and terminal arranged

V FLEET TRANSPORTATION has come a long way since the 1908 Arizona mule team days. Today, fleets moving household goods, such as ours with 166 units, travel as much as 9½ million miles a year. Modern methods of truck transportation require modern methods of maintenance and service. And with this thought in mind, we arranged an "assembly line" layout of buildings on our new five-acre site at Los Angeles.

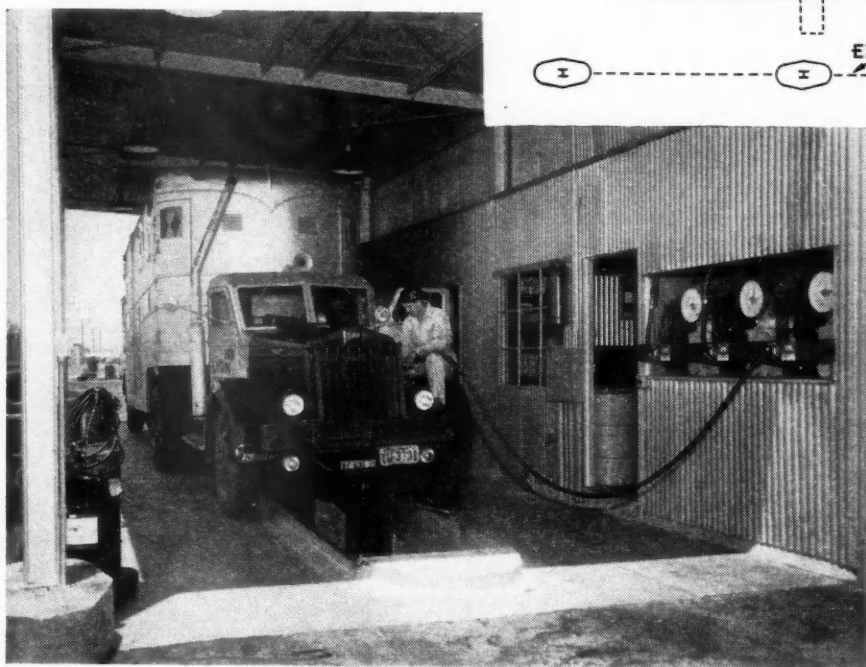
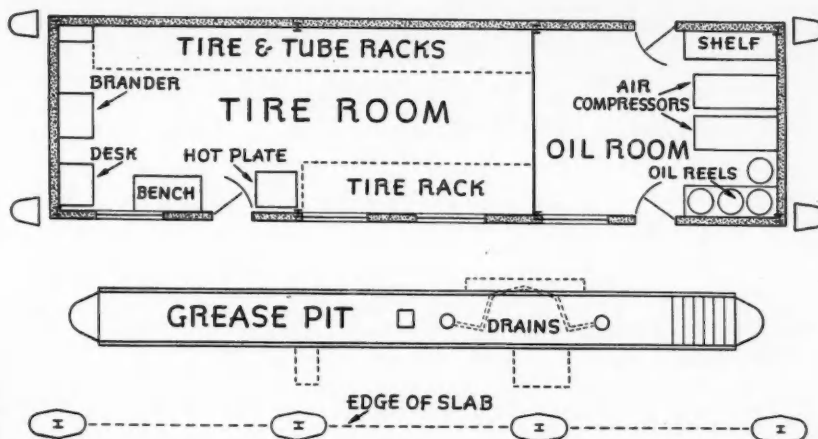
The keynote of our new layout, in operation since March, 1947, is fast maintenance and service, and plenty of elbow room for movement of our big rigs. Allison & Ribble, our architects, laid out the buildings on a "production line" basis. This gives us the speed we wanted. They also separated service and maintenance work into several individual buildings, spaced well apart, so that we now have the required "elbow room."

The overall cost of the buildings, including the terminal, land, and equipment, was \$300,000. Service buildings and equipment accounted for \$105,000 of the total.

Buildings are lined up on two sides of a rectangular plot (Fig. 1). The approach to the plot gate is a 30-ft paved driveway. Directly through the gate, and in a straight line, are stations for a scale, wash building, and tire inspection and grease building.

Fig. 3. Grease and tire building has complete equipment for these important functions. Additional tire storage is provided under stock room in garage

Fig. 4. Different grades of lube oil are served through hose on automatic rewind spindles and each dispenser is metered to the quart to aid in records



x 16 ft all-metal structure, aluminum painted, on a concrete platform and has a catwalk so that the operator can easily reach the top of any rig. Shampoo and spray pipes, automatically controlled, run the length of the building and assure a thorough cleaning job. When a particularly dirty unit comes through, it is first driven to the right of the building, placed on a hydraulic lift, and given an air pressure and steam cleaning. A portable steamer is used for this work. After the pressure and steam cleaning, the vehicle is run through the regular shampoo and rinse.

One man handles the entire work of this station, and puts a tractor and trailer through an average cleaning job in about 25 minutes.

Fleet's Maintenance

for maximum efficiency and maneuverability on huge plot

At the end of this section of the "assembly line," the rig swings across the yard, passing a centrally-located fuel island, to the garage building. The vehicle moves down the row of departments in the garage building, stopping at those sections where service work is indicated. After completion of necessary work in the different shops, the unit passes on to the outdoor dynamometer for final testing, and then off to the end of the plot for storage.

Let's follow a rig down the "assembly line" to get a good idea of the efficient flow of equipment that results from the production line technique. A unit just off the road enters the gate and drives directly on to a scale, if any weighing is necessary, or continue straight ahead to the wash building, which is approximately 270 ft beyond the gate.

Every vehicle in the fleet, after every trip, must go through the wash station. The building (Fig. 2) is a 48

Second Stop: Lube & Tires

THE cleaned vehicle's next stop is a hundred feet ahead at the grease and tire building (Fig. 3). A tire man meets the rig at the entrance, performs his inspection, and drives the rig into the building, over the grease pit. The 54 x 29 ft building is also of all-metal construction, aluminum painted, and on a concrete base (Fig. 4). One man takes care of the entire greasing procedure, and also changes filter elements and checks battery water. Lube oil is served from three 550-gal underground tanks. Automatic dispensing hoses are all on automatic rewind spindles. Every dispenser is metered to the quart so that a close record can be kept of the lube cost on each vehicle.

(TURN TO NEXT PAGE, PLEASE)

Segregated Service

(Continued from page 39)

Three electric pumps control the flow of oil from the underground tanks. These pumps, along with two compressors for the gear grease and the high pressure lube dispensers in the pit, are located inside the grease building. The two compressors are run alternately, so that there is always a spare on hand in case of an emergency.

The grease pit extends almost the entire length of this 54-ft building. Four automatic rewind spindles for gear grease and high pressure lube oil are recessed into the pit walls. Grease and oil are pumped from standard drums by the air pumps installed in the building. Drained oil is channeled from the pit to an underground sump.

The tire section of the grease building is 35 x 13½ ft and has racks along one entire wall, and half of the wall facing it. The remainder of the space is equipped with a brander, hot plate, work bench, and desk for the tire expert. Ample outside storage space is available.

As our truck has progressed along the "assembly line," notations on the condition of the vehicle have accumulated on a report form kept in the cab of the unit. Each man at each station is charged with the re-

sponsibility of watching for and recording on the form any mechanical deficiencies.

Third Stop: Garage

THE vehicle is run from the grease building across the yard to the garage building (Figs. 5 and 6), and the notations on the form in the cab determine which department will receive the unit. An all-concrete structure, 133 x 45 ft, the garage is divided into the following sections: Body shop; parts department and toilet and locker facilities; engine repair room; electrical department, and general mechanical repair shop. The body shop, employee washroom facilities, engine room, and general mechanical repair shop each opens onto the yard, and has an individual entrance. The remaining sections are situated in the back portion of the garage building.

Since we are located in Los Angeles, where the sun always blesses us and fog is nothing more than liquid sunshine, we haven't found any need for doors. They can, however, be easily installed if a need for them is evidenced. Open construction of this type also eliminates

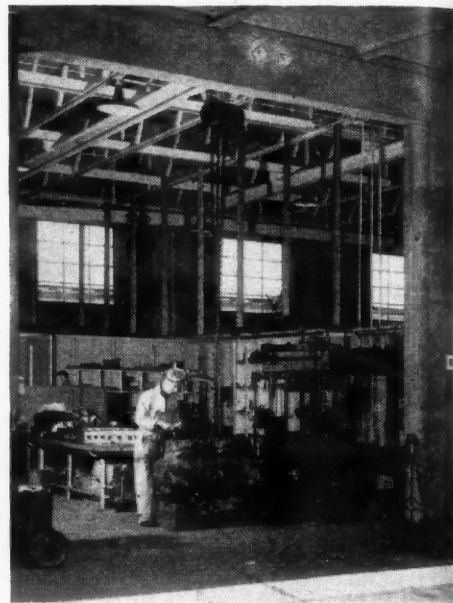
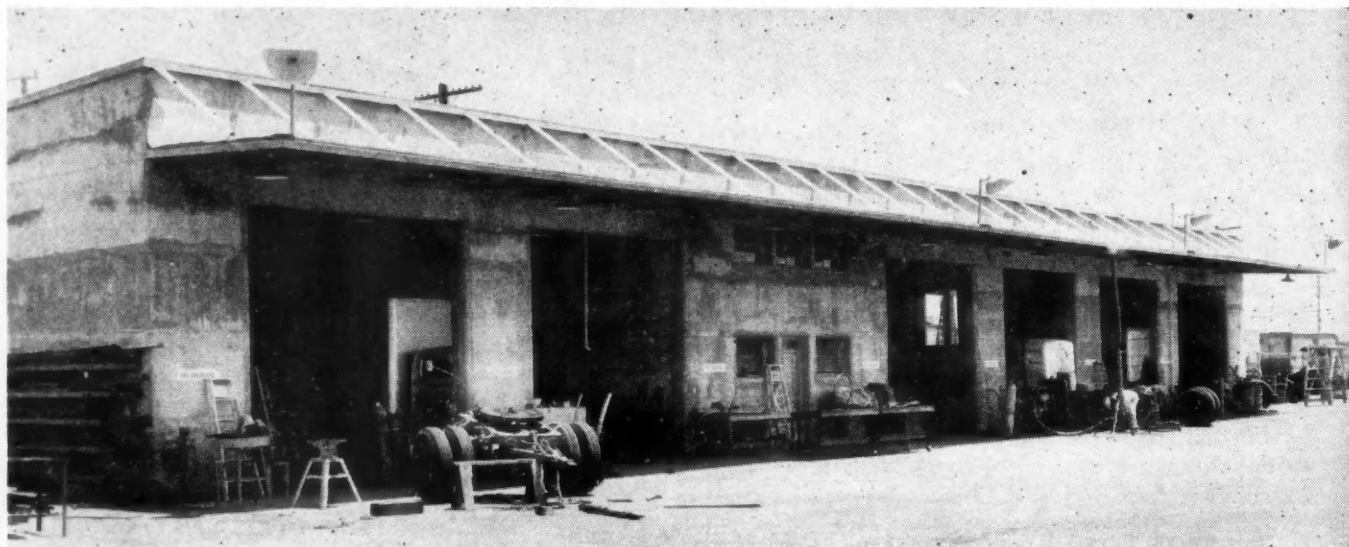


Fig. 7. Engine shop handles all rebuilding steps, is connected to all other sections by monorail system

the necessity for mechanical ventilation equipment. A 10-ft roof overhang gives all the protection necessary from the elements and also extends the covered working area of the individual shops should there be a "full house" in the garage proper at any time. Atop the overhang is a series of 1500-watt floodlights for night operations.

An important feature of the whole garage arrangement is our overhead rail system. Each shop has at least one rail, with a three-ton capacity hoist, that runs from front to rear

Fig. 5. Main garage building is of concrete construction with overhanging canopy. Arrangement is shown in plan at right and in departmental photos above



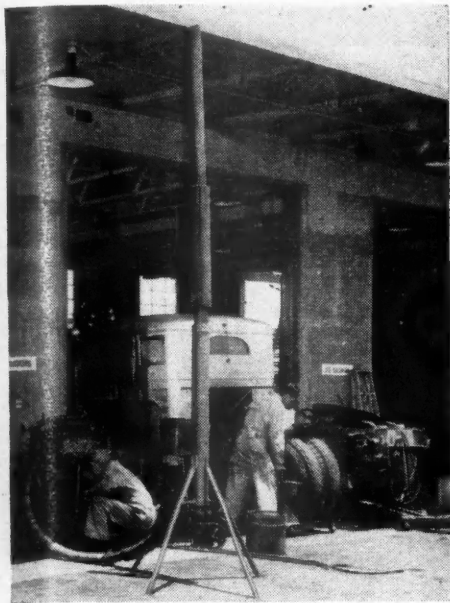


Fig. 8. Even though engine test stand is mounted outside, flexible line and stack carry fumes through roof canopy

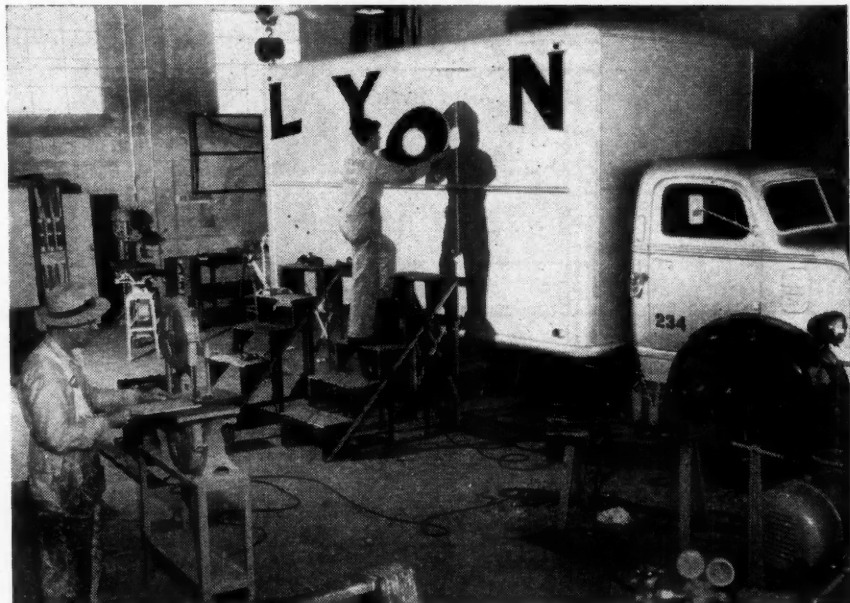


Fig. 9. Body shop handles all body work except painting which is done outside. Equipment includes complete wood and metal working tools, gas and electric welders, I-beams for frame straightening and special step ladders

of the shop. The individual rails in the general repair shop all connect at the rear of the garage to a single overhead rail travelling the entire length of the repair shop and extending out from the building to the degreaser. Innumerable uses are found for this handling equipment. In effect, any object can be moved on the rail system between any two shops in the garage to save considerably in handling time.

A typical time saving operation is in connection with degreasing. The hoist comes into place over the part

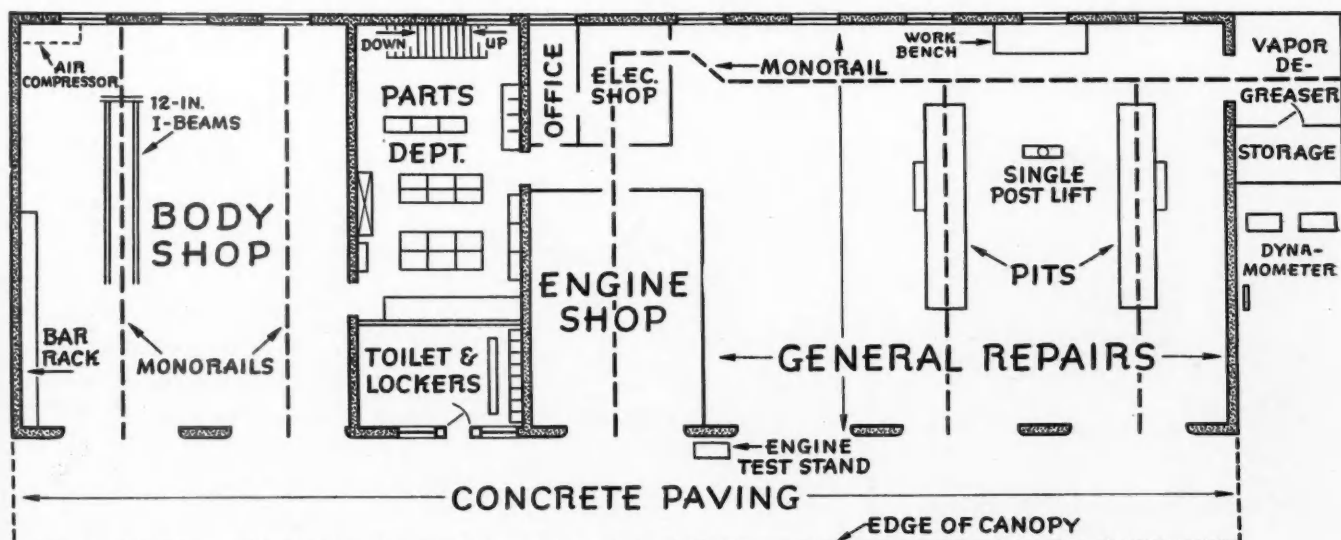
to be degreased, regardless of which shop it may be in, picks it up, and carries it along the overhead rail to the degreaser located outside the shop. When the degreasing is completed, the rail and hoist quickly return the part to the proper station. It's easy to see the work that has been eliminated. Carts, dollies, motor mounts, and several handlings were previously necessary for this now simple degreasing procedure. Degreasing is a good example of the economies effected by an overhead rail and hoist system.

Body Shop Features Mobility

FIRST station in the garage line is the body shop (Fig. 9). Complete metal and woodwork equipment is available, including electric arc and acetylene welders, metal brake, band saw, bench and cut off, planers, shaper, and drill presses. Flexibility is a principle of body shop operation, so that, as far as practicable, all equipment is mobile. Two portable welders, for instance, can be put to work on the body of a truck undergoing repair in some other section of the garage. The time saving factor is obvious. In addition, each of

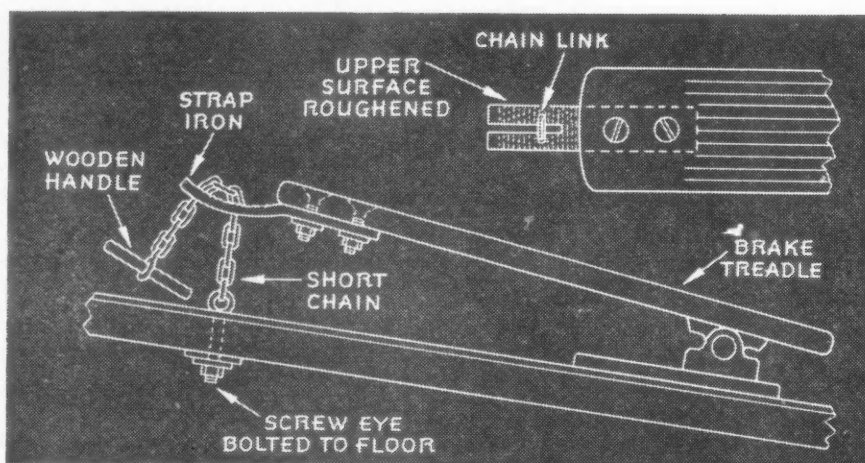
(TURN TO PAGE 140, PLEASE)

Fig. 6. Garage floor plan emphasizes accessibility of all departments. Equipment is unusually complete, includes extensive monorail and chassis dynamometer



SHOP HINTS

FROM FLEET SHOPS



Air Brake Treadle Lock

by Fred W. Teufel, Fairlie & Wilson Coal Co.
Harrison, N. J.

Our coal and fuel oil trucks drive hydraulic and fuel oil pumps through power take-offs, preventing use of the engine as a brake while unloading. After a coal truck coasted driverless

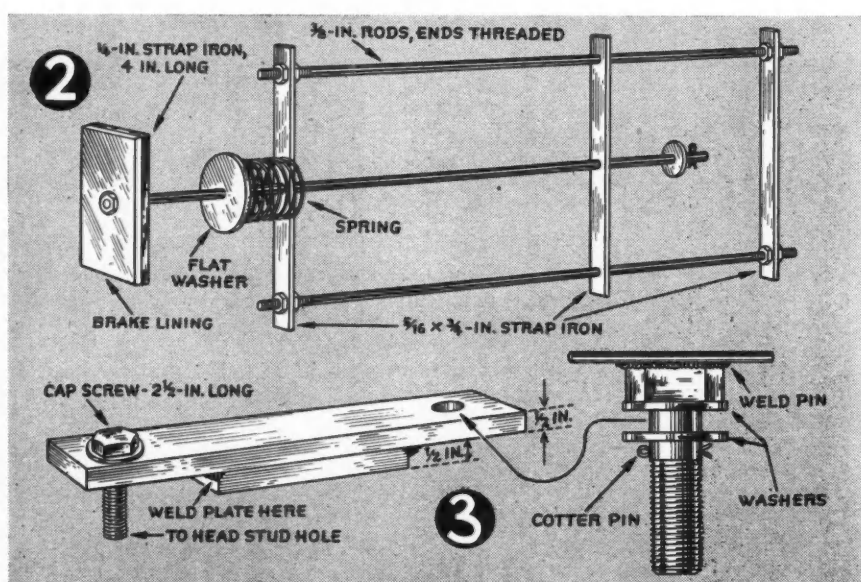
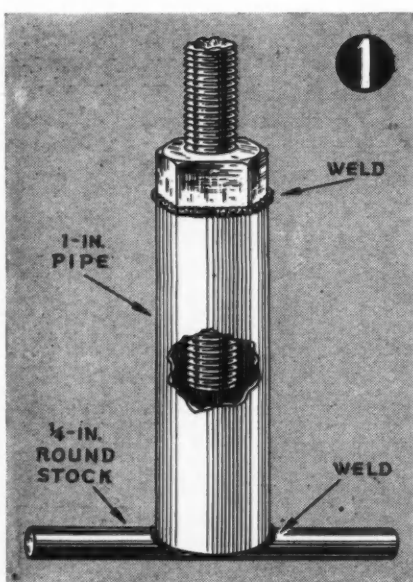
down a steep hill as its body was being raised, we hit upon this idea, for holding the vehicle.

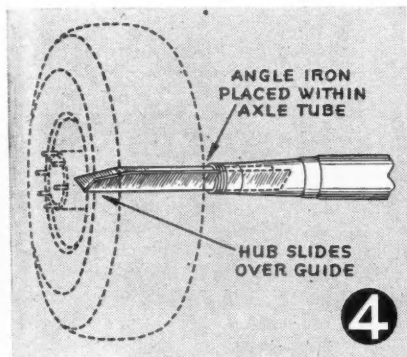
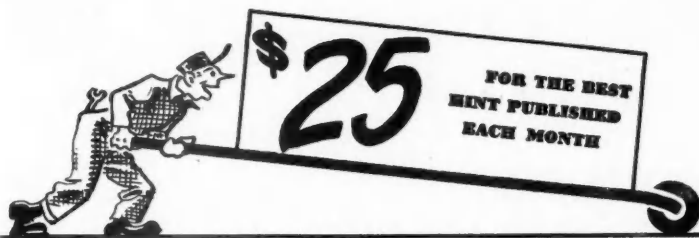
We apply the air brakes and hold the pedal in an applied position with the device illustrated.

\$25
HINT
OF THE MONTH

This is made by attaching a slotted strap iron to the front of the brake treadle as shown. A common eye bolt is fastened to the floorboard directly underneath the front of the treadle, and a length of chain is secured to it. A wooden handle is slipped into the end of the chain so that it can be used to hold the pedal in any degree of application. The top of the slotted strap iron is filed rough, and the iron itself is slightly rounded so that there is no danger of the chain slipping off.

This system will not drain off air pressure since the engine is operating when the lock is used. Tests made by our fleet prove it is practical and a sure way of holding trucks on hills.





Here are the staff's selections for this month. Is your name among those present? Will it be next time? Remember, men, this is your department—reserved for your pet tips on truck maintenance—or your favorite shop-made tool—or any idea that will save time and money in vehicle service. Don't underestimate your ability to help another reader. Many times we find that a tool or a procedure used as common practice in some shops is new to others. So get a piece of paper and put it down—now, while you are thinking about it. You'll be paid for your trouble. Selected contributions receive \$5—AND—each month one is awarded \$25 as the Hint of the Month. Shall we reserve a space in this column for you next month?

1. Tire Carrier Bolt

by Ward W. Carr

Western Trans. Co., Watertown, S. D.

Every man in the trucking industry knows how rusty the spare tire clamp bolts get. The bolt protrudes through the half wing nut from one to three inches and may rust so badly that the bolt will twist off when a wrench is applied to the nut.

Here is what I have done to eliminate this trouble. Cut a piece in 1-in. gas pipe long enough to fit over the end of the bolt, weld one end shut and weld a short piece of round stock across the end to act as a wing nut. Then weld the nut to the opposite end of the pipe.

Now, when the bolt threads are oiled, the extension nut will cover the bolt and keep rust and dirt off.

2. Pedal Depresser

by John W. Lueders

Park Laundry Co., Jamaica, N. Y.

Here is a little device I have used for one-man brake adjustment jobs. I have found it very handy in helping to make adjustments on Ford trucks.

The pedal depresser consists of two $\frac{3}{8}$ -in. rods 18 in. long and threaded on both ends. Three pieces of strap iron are cut about 6 in. long and drilled $\frac{1}{8}$ in. from each end. The

rods are fitted through the end holes in the strap irons and held secure with nuts pulled up tightly.

Next a $\frac{1}{4}$ -in. strap iron is cut 4 in. long and is welded or bolted to the end of a $\frac{1}{2}$ -in. rod 18 in. long. A piece of brake lining is bolted or glued to the face of this strap iron as shown, and the other end is drilled to take a cotter pin. This rod is then threaded through the center strap iron, the front strap iron of the frame, a heavy spring and a flat washer.

Now you have an adjustable pedal depresser. By placing this device against the seat with the head depressing the brake pedal, you can get an equal pressure to enable you to adjust each wheel brake to an equal drag. I also use this tool when bleeding brakes.

3. Valve Clamp

by H. Tyreman, Hamburg, Pa.

Some confusing conditions come up in fleet shops with the hydraulic valves on the White engines. I have made a clamp to hold the valve seated while checking the clearance, and find it helps a lot in this service.

The clamp is made from $\frac{1}{2}$ -in. stock, with holes drilled in the ends as shown. At the center of the iron a $\frac{1}{2}$ -in. x 4-in. piece is welded. This

forms the block to fit over the top of the valve. A cap screw $2\frac{1}{2}$ in. long is used in one end of the clamp, while a hand screw (with a pin wing nut) is used in the opposite end. This clamp is bolted to the head over the valve and can be turned down by hand to put pressure on the valve head while checking clearance.

Details of the hand adjusting nut can be seen in the drawing. This feature will enable the mechanic to fit the swivel end to the head stud hole and tighten the other with the wing tip quickly and without hunting for a proper size stud.

4. Dual Wheel Assembly

by Ernest W. Hoyt

Post Office Garage, Boston, Mass.

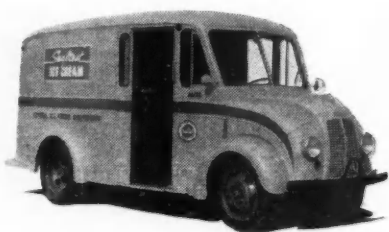
This tool will save time and much lifting when installing heavy rear wheels and hubs. It can be used in the shop or carried on the truck for road use.

Simply take a piece of angle iron and cut it as shown so that it will just fit in the end of the axle tube. The V will be at the bottom, and the offset will allow the upper edge to fit flush with the outside of the tube.

Insert a prybar in the wheel, jack up the vehicle to the proper level and start the wheel and bearing over the shaft. It will slide right over.

GENERAL ICE CREAM CORPORATION AND SUBSIDIARIES																				
TRUCKS - OPERATING COSTS AND STATISTICAL INFORMATION																				
12 MONTHS ENDED SEPTEMBER 30, 1946																				
PLANT	TRUCKS		OPERATING COST PER MILE						FIXED COST PER DAY IN SERVICE				TOTAL COST		AVERAGE MILES					
	No. at Plant	No. In Service	Av. Size	Av. Age	Tires and Tubes	Repairs and Painting	Gasoline	Oil, Anti-Freeze and Gen. Gar. Work	TOTAL	Storage	License	Depreciation	Insurance	TOTAL	Per Mile	Per Day	Av. Days Per Truck	Per Day	Per Gal. Gasoline	Per Qt. Oil
MILK																				
Albany	22	21	1.1	7.5	.006	.044	.028	.022	.100	.23	.14	.29	.01	.65	.135	2.49	273	18.5	4.84	77
Brighton Place	67	58	1.3	8.0	.008	.058	.033	.039	.138	.88	.16	.55	.05	1.64	.220	4.43	239	20.2	4.54	78
Bry & Chap. & Miller's	147	135	1.5	9.0	.011	.059	.027	.031	.128	.29	.12	.55	.27	1.23	.175	4.55	275	26.0	5.16	85
Deerfoot-Roxbury	40	39	1.1	7.6	.008	.042	.021	.028	.099	.69	.05	.36	.04	1.14	.137	4.15	292	30.4	6.19	71
Deerfoot-Southboro	30	27	1.9	8.2	.011	.036	.026	.015	.088	.25	.13	.73	.01	1.12	.117	4.66	229	39.9	5.32	40
Dodds-Gas	73	69	1.3	6.2	.006	.050	.028	.054	.138	.49	.20	.64	.05	1.30	.203	4.05	266	20.0	5.13	101
New Haven Dairy	80	68	1.4	7.6	.004	.055	.027	.036	.122	.35	.10	.52	.08	1.72	.358	226	20.8	4.72	83	
Schenectady	28	27	1.2	5.2	.004	.042	.032	.031	.109	.40	.14	.68	.08	1.22	.176	3.26	280	18.6	4.42	79
Springfield	46	43	1.5	8.6	.007	.062	.026	.031	1.5	.24	.08	.55	.06	.93	.169	3.72	273	22.0	5.20	83
For: Henry	3	3	1.3	6.0	.006	.050	.019	.005	.086	.16	.34	.67	.02	1.19	.097	6.85	168	70.5	9.68	160
Saranac Lake	4	3	1.4	7.3	.007	.055	.014	.004	.050	.05	.23	.10	.03	.41	.058	3.03	202	52.0	11.87	202
Warre	1	1	1.5	8.0		.031	.038	.046	.115	.03	.39	1.39	.12	1.83	.173	5.72	176	33.0	6.46	157
Messena	2	2	1.3	9.0	.003	.012	.017	.003	.035	.01	.26	.77	.03	1.07	.054	3.12	158	57.5	9.20	198
Presque Isle	3	3	2.0	1.0		.016	.017	.001	.034		.12			.12	.036	2.21	154	60.9	10.38	306
Leconia	2	2	1.0	8.0	.016	.007	.027	.007	.057		.13	.28	.04	.45	.065	3.54	59	53.8	8.26	70
MILK	562	511	1.3	7.7	.008	.052	.027	.032	.119	.41	.13	.55	.10	1.19	.169	4.97	261	24.1	5.14	86
ICE CREAM MFG.	392	365	1.8	7.8	.007	.032	.020	.015	.074	.70	.21	.96	.10	1.97	.111	5.09	205	49.0	7.33	130
ICE CREAM BRANCH	169	159	1.5	7.6	.007	.029	.019	.008	.063	.59	.23	1.08	.08	1.98	.101	5.08	183	50.2	8.24	150
TOTAL 1946	1122	1035	1.5	7.7	.008	.052	.													

Fig. 1. Annual report to 83 operating units show how they stand with regard to transportation costs. Column 3 shows average truck size by nominal rating



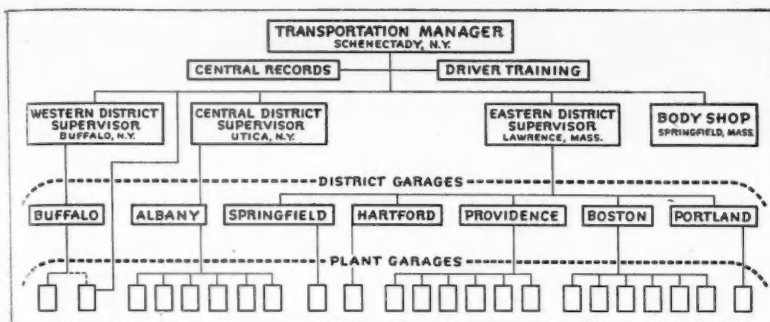
Strong CENTRAL

1479-vehicle fleet operates from 83 locations, yet it is highly standardized on equipment, purchases, records and maintenance, even builds its own bodies

IT HAS often been said that the problems of maintaining a widely scattered fleet are so varied and so decentralized that central control is impractical. Often the headquarters transportation office is relegated to a position of merely establishing basic policies. We of General Ice Cream Corp. do not subscribe to that theory and we believe that we have evidence to show that strong central control pays off in increased

Fig. 2. Each month the operating units furnish fleet headquarters with detailed cost figures for each vehicle on form shown

[illegible]



DIVIDED INTO 4 PARTS

**This article: No. 1, Central Control
No. 2, Ice Cream Body Building
No. 3, Driver Training Program
No. 4, District Garage Operation**

els range from 1/2-ton pick-ups to 50,000-lb. tractor-trailer combinations, every one of our trucks purchased in the last 10 years has come from one of three manufacturers. All use the same one brand of gasoline, one brand of oil, one brand of tires, one brand of paint, etc. Similarly all of our bodies come from one of three builders including a large proportion from our own body plant in Springfield, Mass.

Such standardization has not always been easy. Our fuel supplier, for instance, had to open up two new

CONTROL

Increases Scattered Fleet's Efficiency

operating efficiency and economy.

That ours is a scattered fleet of substantial size is a statement that cannot be challenged. Our latest vehicle count showed a total of 1196 trucks, 14 truck-tractors, 19 trailers and 250 passenger cars. Exclusive of passenger cars this fleet operates from no less than 83 different plants. The largest of these has 147 vehicles, a few have only one, the majority have less than 10. The plants are

by **B. S. SNOWDEN**

**Transportation Manager
General Ice Cream Corp.
Schenectady, New York**

scattered from Presque Isle, Maine, on the north to Erie, Pa., on the west and pretty well blanket the entire New England and New York area in between.

Yet despite this startling decentralization and the fact that our mod-

areas in order to serve all branches of the fleet and some of the others arranged special concessions to accomplish the same end. But as a direct result of this standardization, several distinct advantages accrue.

Standardization Pays Off

OBVIOUSLY we get the benefit of mass buying power. Just as apparent is the fact that when each fleet operating unit knows that it has

(TURN TO PAGE 111, PLEASE)

Form is checked carefully for individual vehicle performance and is used as guide to efficiency and vehicle replacement

[illegible]



H. O. Mathews

▼ CHROME-PLATING of wearing parts of vehicles may be divided into two classifications, (1) for emergency use, and (2) for economy. Emergency use implies that the parts are chrome-plated for re-use because new parts are not available and cost is not a factor. Economy implies that the saving in wear and subsequently in expense of operation more than justifies the cost of chrome plating the worn parts. Some emergency repairs have led to further economy.

During the war years, shortages of vital materials in tank engines of the radial air-cooled type made it necessary to resort to emergency methods of reclaiming worn cylinder barrels. The Porus Krome method of plating these worn cylinders was employed to rebuild them to their original size and the cylinder barrels were reused the same as new parts.



Chrome-Plating Truck Parts

Tests indicated that the wear in these cylinders was greatly reduced even in dusty operation. The practice of rebuilding these barrels was followed until the demands for these parts were fulfilled. While time did not permit much cost analysis and a war is not a good operation for economy, the fact remains that there was more than 50 per cent saving in the cost of new cylinder barrels for these engines.

There was also a shortage of piston pins during this period. Tests

*From a paper presented at the SAE National West Coast T & M Meeting, Los Angeles, Aug. 21-22, 1947.

were made on chrome-plating worn pins, grinding them to a predetermined undersize, and adding chrome to refinish them for reuse in all types of automotive engines in military use. This operation, while satisfactory results were obtained, was quite expensive compared to new piston pins and was discontinued as soon as possible. These are two examples of emergency repairs, one of which was economical and one which was not.

One of the largest bus operators in the country tried chrome-plating connecting rod journals on crankshafts, pistons, piston pins, king pins, etc., during the war years and for a time

after the war while parts were short. Satisfactory results and increased life were obtained, particularly from chrome-plating connecting rod journals on crankshafts of two-cycle Diesel engines. In his opinion, it was more satisfactory than metalizing in his particular operation. But the main objection was the cost and this process was, therefore, only used for emergency repairs.

One operator of a large fleet of heavy-duty equipment reports that he tried an installation of hard chrome cylinder sleeves in a Cummins model HB 600 engine. The test lasted 20,000 miles when a rod broke and

**Round-up of fleet and factory experience
finds that chrome-plating pays off but
only if used at the right time, in the
right places and with the 'right process**

by H. O. MATHEWS

Manager, Fleet Operations Standard Brands, Inc.

CONCLUSIONS REACHED BY THE AUTHOR

1. Chrome-plating to reduce wear on chassis parts is satisfactory but not economical insofar as reclamation of worn parts is concerned.

2. Chrome-plating of many of these parts originally installed in the vehicle is desirable.

3. Chrome-plated cylinder walls are only partially satisfactory and are too expensive unless sleeves are used.

4. Chrome-plated rings and walls will not work satisfactorily together.

5. Chrome-plated rings are quite satisfactory according to tests but their full value may not be realized due to failure of other wearing parts.

6. Fleet operators would do well to promote the use of chrome-plated rings in original equipment.

***For an important discussion of the piston ring
aspects of this article, turn to page 48***

*

to REDUCE WEAR

ruined the engine. The sleeves were checked at that mileage and all were slightly scored. The pistons were covered with black soot indicating a condition of blowby. The cylinder wear did not exceed .0025 and it is the operator's opinion that the engine was operating with borderline lubrication, particularly at starting. It is to be noted that these cylinders were plated with hard chrome with no porosity.

The above mentioned applications of chrome-plating cover most of the emergency uses employed by fleet operators contacted. Few, if any, of these uses of chrome-plating of the

worn parts are economical. The fact remains, however, that since the applications listed above were satisfactory in operation, except for the hard chrome sleeves, operators would welcome the use of harder finishes approaching that of chrome-plating on wearing surfaces such as those mentioned. Perhaps the long-awaited competitive market will bring out changes in specifications to increase the life of these and other parts.

Most Economical for Rings

THE economical use of chrome-plating to reduce wear seems to be confined to chrome-plating of piston

rings. There is not much conclusive data from operators on the results of chrome-plated rings and it was for this reason that information was secured from piston ring manufacturers.

Two definite conclusions have been reached which are axiomatic in the use of chrome-plated rings. The first is that chrome-plated rings and chrome-plated cylinders do not work together and the second is that only the top ring should be chrome-plated.

Several operators report that sets of rings have been installed in their vehicles with the top ring chrome-plated and all are operating satisfactorily with regard to power and oil consumption. Little is known in actual experience about the reduction in wear but test data appears to be conclusive.

One operator reports that he had 28 buses in operation in which chrome-plated top rings are installed. Some of these chrome-plated rings are of the porous type and the others are hard chrome. The rings have been in use for one year, or approximately 50,000 miles, so that no information is available as to wear. The operator estimates from 10 to 20 per cent improvement in oil consumption with the chrome-plated rings.

Another operator reports that the engine manufacturer in the case of his equipment has been experimenting with chrome-plated rings but no data was available. This method of checking the results of chrome-plating with other wearing parts of the engine appears highly desirable.

Three of the major manufacturers of piston rings were contacted in search of test data and leads to other operators who might have conclusive results. All of these manufacturers, as well as others, have been following the use of chrome plated rings with unusual interest. All have made extensive tests in their own laboratories and on proving grounds with conclusive evidence in favor of the use of chrome-plated top rings.

One manufacturer states: "The data to date is not complete. . . . There is undoubtedly an improvement of ring life under certain operating conditions; for example, where dust conditions are severe, it is very
(TURN TO PAGE 129, PLEASE)

Piston Ring Plating Now Proved by 7,000,000 Miles*

A discussion of one aspect of Mr. Mathews' paper presented on the preceding pages

by **LEE DOTY**

Perfect Circle Corp.

IN MR. MATHEWS' paper, he points out several facts which correspond with our experiences both in laboratory tests and road testing of porous-chrome rings. There are, however, several things which I would like to bring up in connection with this paper.

The statement is made that there is not much conclusive data from operators on the results of chrome-plated rings. Porous-chrome rings have been a standard product with our company since 1941 and there is very complete data available on its use by the armed forces and the airlines in aircraft service. In 1942, 1943 and 1944 a number of large automotive fleets cooperated with us in running tests which covered over 7,000,000 miles of actual operation. The results of these tests have been published and briefly they showed from 64.3 per cent to 91.1 per cent increase in ring life and from 21 per cent to 98 per cent increase in cylinder life depending upon the type of engine and the type of service. To date, more than 1,000,000 porous-chrome rings have been placed in automotive service and a large number of fleets have adopted porous-chrome for use in their engines following extensive testing in their own operation.

The statement is made that the chrome-plated ring is inherently expensive. If the individual chrome ring is compared with the individual non-chrome ring, it would seem that the cost of the ring is very high, but

on the other hand, if the cost of the complete set of rings is considered, the increase in cost becomes insignificant. For example, a set for a popular heavy-duty engine carries a list price of \$23.25 in the regular rings and \$27.60 list with porous-chrome rings. This is a difference of only \$4.35 at list price, and when we consider the cost of overhauling an engine, it does not take many additional miles of service from rings to offset the \$4.35 many times over. Even if, contrary to general experience, the rings do not have longer life, the reduction in cylinder wear alone would offset this increase in cost many times over by making re-boring or replacing of the cylinders or the sleeves necessary at less frequent intervals.

Contrary to several comments made in this paper, the use of a porous surface on the ring does not necessarily mean less chrome to resist wear, for the simple reason that the thickness of the chrome plate is increased to compensate for the amount of porosity placed on the ring so that the amount of chrome remaining on the ring after the porosity has worn off is equal or can be greater than that on a ring which has been plated with hard-chrome and no porosity provided.

Mr. Mathews quoted a statement to the effect that if a ring is carefully made, there is no need for a porous surface because the ring will not have to wear to any great extent to seat-in. It is true that if a ring is carefully made, there will not be a great deal of wear required provided all of the inaccuracy is in the ring; but, unfortunately, there are inaccuracies in cylinders due to wear, heat distortion and so on which require that wear take place on the ring to compensate for them.

by **RALPH R. TEETOR**

President, Perfect Circle Corp.

IN EXPERIMENTING with chromium-plated piston rings, three different processes have been employed. One process consists of a smoothly turned ring blank chromium plated and then the chromium subjected to current reversal to obtain porosity. The second method employed has been one of lapping the face of a smoothly turned ring then chromium plating it and finishing the chromium plating with another lapping operation. The third method employed has been one of chromium plating a relatively rough tooled finish and following this with a short lapping operation. Rings produced by any of these three processes have been satisfactory whenever the final surface of the ring has sufficient roughness and accuracy so that initial seating in the cylinder is insured.

Performance of chromium-plated piston rings of any of the types mentioned has been quite satisfactory. Usually a slight penalty is incurred in initial oil consumption when chromium-plated rings are employed compared to cast iron rings because of their inherently slow seating properties. An occasional set will perform equally as well initially as cast iron rings but generally a 10 to 30 per cent increase in initial oil consumption is experienced. We have found no practical difference in oil economy between cast iron rings and chromium-plated rings after they have worn to normal adaptation.



CLIP AND SAVE

This article is the second in a series outlining in detail the eight vital steps every fleetman should take in the selection of the right truck for the right job.

The eight steps deal with basic factors that will not change with time or styling. It will pay you to clip and save them for your reference file. Together, these articles will make a valuable handbook on the correct selection and application of trucks.

* From prepared discussions presented at the SAE National West Coast T & M Meeting.



CORRECT Application of Motor Trucks

Eight vital steps in the selection of the right vehicle for specific service requirements and economical operation

STEP 2

How to Calculate Engine Horsepower Requirements

What horsepower tells about performance . . Performance for normal and other than normal conditions . . Figuring specific performance for city and intercity service . . Determining horsepower for tractor-trailers

THIS STEP, *How to Calculate Engine Horsepower Requirements*, is the key step in correct application. Selecting the truck model and correct wheelbase length in the steps that follow must wait till the engine is chosen. Selecting the other units in the later steps rests heavily on the engine choice. For at the heart of truck performance and economy is the engine. Best performance and economy depend on the choice of the correct engine first of all.

Truck performance can be compared in principle to a horse and wagon. A loaded wagon may be drawn by one or two horses, or it may be hitched to a greater number of horses, depending on how heavy the load is, and how steep the hills are. More horses used also means more speed for the wagon traveling up-hill. In other words, the number of horses determines the amount of work that can be done in so much time.

In a motor truck, the invisible horses under the hood were named *horsepower* because they are a measure of the power. When mechanical power first began to replace the horses, the power was measured in terms of the work a horse was considered able to do. One horse was considered able to lift 100 pounds $5\frac{1}{2}$ feet in 1 second—or 330 feet in 1 minute. Doing this amount of work in a second or a minute, is therefore called one-horsepower rate—100 times 330, or 33,000 foot-pounds per minute equals one horsepower. Throughout this discussion of the engine choice, the word *horsepower* will be very prominent. But more about that in a moment.

Horsepower, Torque, or Displacement?

ALL the way through the following consideration of engine performance, the figures on horsepower will be used as a guide to selecting the engine rather than the figures on torque of the engine, and rather than displacement data. Horsepower is used since it tells the output of the engine—the measure of the rate at which the engine can do work. Torque should not be confused with horsepower, since torque is not a measure of the rate at which the engine can do work. Torque is a measure of the effort or force which the engine exerts. Displacement is the volume of all the engine cylinders in which the piston heads move.

Torque and displacement of engines of the same type are ap-

proximately proportional to each other, if various factors of the engine design and efficiency are equal. But neither torque nor displacement gives enough information for judging performance, because neither one takes in speed. Torque varies at different speeds, but not in proportion to speed. For example, at very low speeds, just above idling, torque is at a minimum—as can be seen on the chart (Chart 1, Page 8). At higher speeds up to an intermediate range—usually around 1000 rpm to 1500 rpm for truck engines—torque reaches its maximum. After this, at still higher speeds, torque usually begins to decrease. Horsepower on the other hand, increases directly with the speed until a maximum horsepower is reached, as can be seen by the chart on the next page.

In determining the maximum engine performance, torque is of little value because the maximum torque figures are usually the only ones published by truck manufacturers. And maximum torque occurs at low engine speeds—for example, at around 1000 rpm to 1600 rpm in the performance chart shown a moment ago. Now, if torque and rpm were published at the higher speed of maximum power—which they usually are not—these figures could be used to judge performance. This would be exactly the same, though, as using the maximum horsepower figures which are more commonly published by each truck manufacturer.

Horsepower Tells About Performance

HORSEPOWER tells engine performance completely because horsepower always includes both torque and speed, which combine to determine the output of the engine. Just how torque is related to horsepower can be seen by this formula:

$$\text{HORSEPOWER} = \frac{\text{torque in lb-ft} \times \text{speed in rpm}}{5250}$$

With this formula it can be seen that knowing the horsepower is equal to knowing both the torque and the engine speed. On the other hand, the formula shows also that knowing the torque at a lower speed than maximum horsepower tells nothing about maximum performance or output of the engine.

CORRECT Application of Motor Trucks

So the facts point straight to horsepower. Selecting the right engine for the job is a matter of selecting the right horsepower. Three kinds of truck performance requirements are tied in closely with engine horsepower.

1. Grade ability.
2. Accelerating ability.
3. Starting ability.

The first, grade ability, is obviously an important performance requirement. An operator with intercity routes and cross-country hauls should select an engine partly on the basis of the grades along the route. If the gross weight of the truck, the per cent of grade, road resistance, and miles per hour are known—then the horsepower needed for the grade can be calculated, as shown later in this step.

Another important performance requirement for motor trucks is accelerating ability, which is the ability of the vehicle to gain speed. In city traffic this accelerating ability is constantly in use. When selecting an engine on the basis of an accelerating ability requirement—or, the time required for the truck to increase in speed to a given maximum miles per hour—horsepower statistics from the manufacturer are necessary. Horsepower is the kind of engine ability that is most directly related to acceleration. Horsepower is also most directly related to starting ability—the ability used in putting the truck in motion from a dead stop when it is in bad going, and used in starting the truck on a steep grade.

How Standards Aid Engine Selection

ANY effort to secure the best profit in a truck operation must include the important factor of engine horsepower. The question to be answered is: How much horsepower is needed to do the job? In order to answer this question it is necessary to govern the choice of the engine by a set of reliable performance standards under normal service conditions.

A foundation for a performance standard is established when operating experience over a long period of time has proved that a certain amount of power gives satisfactory performance and economical service. Some truck users have set up such standards based on their own specific operating conditions. Generally, the performance and economy of operation, when these standards are followed, is very satisfactory. The most comprehensive performance standards come from the studies made by truck manufacturers. Some manufacturers have recorded the experiences of operator of their trucks over many years. From these thousands of records have come a solid set of performance standards based firmly on lowest operating costs and maximum satisfaction to the truck owner, in cases of normal operating conditions.

Performance Standards

NORMAL CONDITIONS

THIS set of basic performance standards is offered here as a guide to the selection of the correct truck units for each trucking job under normal operating conditions.

1. CITY- OR SUBURBAN-TYPE SERVICE

STRAIGHT TRUCKS

Performance Standard: 20 mph Up a 5½ Per Cent Grade (Net)

In city- or suburban-type service, straight trucks (two-axle) are generally used in delivery route and express-type work requiring rather high accelerating ability. These trucks should be able to maintain 20 mph speed up a 5½ per cent net grade when fully loaded.

TRACTOR-TRAILERS

Performance Standard: 20 mph Up a 3½ Per Cent Grade (Net)

In city- or suburban-type service, tractor-trailer combinations are frequently used for heavier cartage and local delivery where the service schedules are less urgent. These units require a performance standard of 20 mph speed up a 3½ per cent net grade when fully loaded.

2. INTERCITY-TYPE SERVICE

STRAIGHT TRUCKS

Performance Standard: 20 mph Up a 5 Per Cent Grade (Net)

In intercity-type service, straight trucks (two-axle) are used for high average speeds in urgent delivery work. Such trucks require a basic standard performance of 20 mph up a 5 per cent net grade with maximum load.

TRACTOR-TRAILERS

Performance Standard: 20 mph Up a 3 Per Cent Grade (Net)

In intercity-type service, tractor and trailer combination units and six-wheel (three-axle) trucks are most commonly used on open highways. These units need to be able to maintain a speed of 20 mph up a 3 per cent net grade with maximum load.

Performance standards are frequently expressed in terms of a ratio between weight and horsepower, in terms of the maximum truck speed up a specified grade, and in other terms. However, the standard here of maximum grade the truck will climb at a speed of 20 mph (with normal road resistance of 1.25 per cent) has the advantage of being more closely related to actual truck operating problems. Also, the 20-mph speed is low enough to allow wind resistance to be disregarded without affecting the accuracy of the standard. Still stronger backing for this performance standard comes from the records of many thousands of truck users. These records prove that the amount of performance called for in these standards gives the most economical operation under normal conditions.

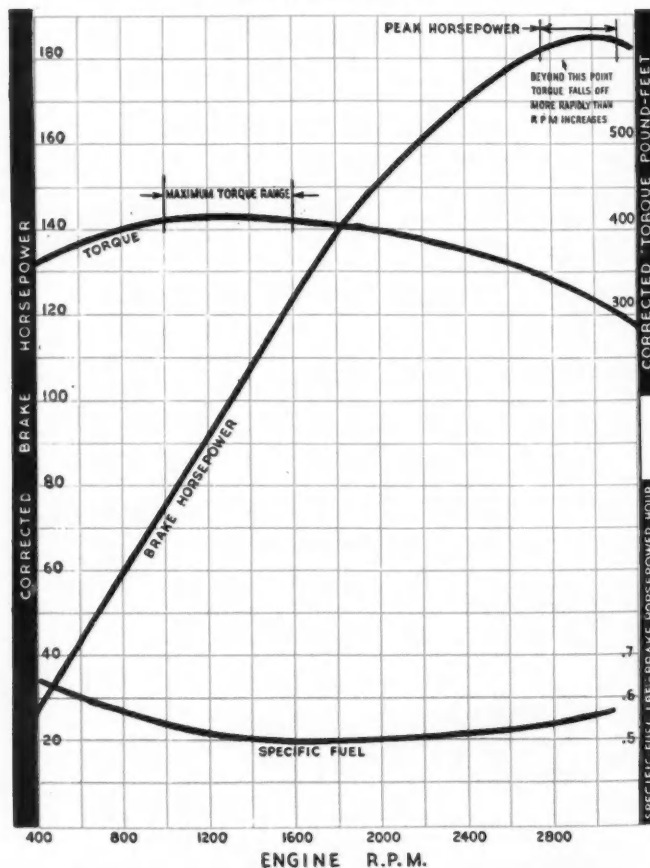
Performance Standards

OTHER THAN NORMAL CONDITIONS

IF THE engine were selected in every case according to the strict rule of the basic performance standard for normal conditions, some trucks would not have enough power. The basic

CHART 1

HORSEPOWER CHART



standards take in the large middle range of trucking jobs, the so-called normal operations. But many jobs are different from what is generally considered normal—grades may be extra steep, or schedules may need higher speeds. Such trucking operations require a greater standard than the basic performance standards because of these differences in conditions. A system has been devised for modifying the performance standards to suit those differences and variations in truck operating conditions.

The keystone of the system is two tables. Table 1, *Service Rating Factors for City- or Suburban-Type Service* and, Table 2, *Service Rating Factors for Intercity-Type Service*, shown at bottom of page. Without these tables, the fleet owner must bank on practical experience and some guessing to arrive at an approximate engine selection. With these tables, the engine requirements of the truck for a particular operation may be easily calculated. That can be done because of the care with which these tables were prepared. Each of the possible truck operating conditions—such as road conditions, maximum loaded speed, etc.—was interpreted in terms of a service rating factor. The factors then had to be calculated in proportion to the effect of different operating conditions on the truck performance, so that on the tables each operating condition has a rating in terms of a service rating factor—a factor higher or lower in value depending on how severe the service is.

As an example of how the service rating factor system is used in determining the performance requirement, any one condition of operation for a truck in city-type service may be taken. The first condition—*type of runs*—is divided into two general classes.

1: Long or medium city and suburban runs on normal schedules.

This is the normal type of operation and requires only the normal power to do this kind of work. A service rating factor of 1.0 is assigned.

2: Large number of short fast runs between frequent stops on hard-working schedule.

On this type of run, power above normal has the advantage

of permitting the driver to meet schedules more easily. Experience indicates that a service rating factor of 1.05 should be used here. The .05 indicates the extent to which horsepower must be increased because of the above-normal working conditions.

Each operating condition has similar service rating factors listed under it. By choosing the correct factors which match the particular condition of service, then multiplying all the factors together, the result is an over-all service rating factor for the job.

This over-all service rating factor tells how much the basic performance standards (Page 8) should be modified to give the grade performance requirement for the particular trucking operation. The speed requirement of 20 mph remains the same through all the standards used here. The adjustment comes in the grade requirement. By multiplying the basic performance standard grade by the total over-all service rating factor the result is a new grade performance requirement—a new specific performance standard. With this specific standard, the exact engine horsepower needed to do the job efficiently and economically can be figured.

Figuring Performance Standard

IN FIGURING the specific performance standard, the first move is to examine the operating conditions and find the service rating factors. Shown below are the Tables 1 and 2 which list the factors recommended for the various needs of two types of service—city type and intercity type. In the table for city or suburban type are factors which evaluate the difference in types of runs, maximum speed, amount of hills, per cent grades, road conditions, and traffic. For intercity service, factors are given for difference in maximum operating speed, amount of hills, per cent grades, road conditions, traffic, and streamlining.

TABLE 1

SERVICE RATING FACTORS FOR CITY- OR SUBURBAN-TYPE SERVICE*										
TYPE OF RUNS	Long or medium city and suburban runs on normal schedules				Large number of short fast runs between frequent stops on hard-working schedules					
Service Rating Factor	1.0				1.05					
MAXIMUM LOADED SPEED— m.p.h. governed	35 m.p.h.	40 m.p.h.	45 m.p.h.	50 m.p.h.	55 m.p.h.					
Service Rating Factor	1.00	1.00	1.02	1.04	1.06					
AMOUNT OF HILLS— Proportion of loaded truck mileage going uphill to total mileage	5%	10%	15%	20%	25%	30%	35%	40%		
Service Rating Factor	1.0	1.01	1.02	1.04	1.06	1.08	1.09	1.10		
PER CENT GRADES— Maximum Gradient (500 ft. long or more)	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
Service Rating Factor	1.0	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.09
ROAD CONDITIONS	Paved	Unimproved dirt, graded and firm	Considerable snow and ice	Rough, hard dirt or rock bed	Mud, deep sand, wet clay					
Service Rating Factor	1.0	1.02	1.03	1.05	1.10					
TRAFFIC	Light				Heavy					
Service Rating Factor	1.0				1.05					

TABLE 2

SERVICE RATING FACTORS FOR INTERCITY-TYPE SERVICE									
SPEED—M.P.H. Maximum normal running speed or cruising speed			40	45	50	55	60		
Service Rating Factor	30,000 g.v.w.	1.00	1.12	1.34	1.64	1.98			
	40,000 g.v.w.	1.00	1.00	1.17	1.39	1.65			
	50,000 g.v.w.	1.00	1.00	1.05	1.23	1.44			
	60,000 g.v.w.	1.00	1.00	1.00	1.16	1.34			
	70,000 g.v.w.	1.00	1.00	1.00	1.08	1.25			
AMOUNT OF HILLS— Proportion of loaded truck mileage uphill to total mileage	5%	10%	15%	20%	25%	30%	35%	40%	
Service Rating Factor	1.0	1.01	1.03	1.04	1.06	1.08	1.09	1.10	
PER CENT GRADE— For the steepest long grade (1,500 feet long or more)	3%	4%	5%	6%	7%	8%	9%	10%	11% 12%
Service Rating Factor	1.0	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08 1.09
ROAD CONDITIONS	Paved	Unimproved dirt—graded and firm				Considerable snow and ice			
Service Rating Factor	1.00	1.02				1.03			
TRAFFIC	Light					Heavy			
Service Rating Factor	1.0					1.02			
STREAMLINING	GOOD (Full, round front, smooth sides, streamlined tail—combined with high speed of 50 m.p.h. or more)			NORMAL		POOR (Square front, ribbed sides, square rear, large area rear—combined with high speed of 50 m.p.h. or over)			
Service Rating Factor	.97			1.0		1.03			

CORRECT Application of Motor Trucks

EXAMPLE 1. CITY-TYPE SERVICE

WITH the use of these tables, determining the specific grade performance requirement for any operation is a simple matter. As an example, here is a typical case—Beverage Bottling Co. in Midcity, Ohio. The truck will be used to deliver to stores in the city and within a 5-mile radius from the bottling plant. The other conditions and circumstances of the operation were studied and entered on *Truck Requirement Analysis* form, Fig. 1, below. The question which will have to be answered is this: How much horsepower will be needed for this truck to work efficiently and economically under the specific operating conditions?

TRUCK REQUIREMENT ANALYSIS
 Name of company or owner: Beverage Bottling Company
 Address: City of Midcity, Ohio
 Type of business: Bottling Soft Drinks Location (where truck used): Locally
 Type of Operation (Check one): ☒ City or suburban ☐ Off the highway
 Trucks used to deliver to stores in the city within 5-mile radius from bottling plant. Heavy traffic.
 Materials to be Hauled: Cases of soft drinks Maximum payload: 10,000
 Weight: 55 pounds Per Case (24) Size container: 18-1/4" x 12" x 6-11/16"
 Body Type: Deck type Dimensions: Weight: 1500 pounds
 Comments: Half depth cases.
 Operating Conditions: Roads (Check one): ☒ Paved ☐ Unimproved
 Terrain (Check one): ☐ Level ☒ Rolling ☐ Mountainous Maximum grade: 9 %
 Comments: 25% of route is uphill -- loaded.
 Paved streets.
 Hauling Conditions: Daily mileage: 150 Hours operated daily: 6 Loaded both ways: Yes
 Payload (Check one): ☒ Fixed maximum load ☐ Variable load ☐ D = long load
 Comments: Loaded by hand. Bottler's body allows fixed number of cases. No load on top deck.
 States in which Vehicle Will Operate: Ohio
 Operated in: Ohio
 Performance Requirements: Maximum operating speed on level roads: 40 miles per hour
 Schedule requirements: Short fast runs with frequent stops
 Comments: Short fast runs with frequent stops
 Company: Beverage Bottling Company
 Date: 1-2-50 By: A. B. Heathorn

Fig. 1. Portion of *Truck Requirement Analysis* form showing information needed to find the specific performance standard for City-Type service

A start is made by taking *Service Rating Factors for City- or Suburban-Type Service* (Table 1, page 9), and finding the factors for each condition. First, *type of run* is short and fast, with frequent stops. On the table this condition has a service rating factor of 1.05.

The top operating speed of the truck must only be about 40 mph. Because of the short runs in heavy traffic, higher speed could not be used. Service rating factor on the table for a 40 mph maximum loaded speed—governed is 1.0.

The trucks of this bottling company travel uphill about 25 per cent of the time when loaded. Under the heading on the table, *amount of hills*, the service rating factor is 1.06 when the truck travels 25 per cent of its mileage uphill.

Of all the grades traveled, the steepest one that is over 500 ft long is a 9 per cent grade. Looking at the table again under *per cent grades*, it shows 1.06 as a service rating factor when grades as high as 9 per cent are encountered.

Road conditions are ideal since the truck route is typical, smooth, hard-surfaced city streets and roads. Under *road conditions*, the service rating factor is 1.0 for this truck.

Traffic is heavy in the part of the city where the truck route is laid out. Service rating factor under *traffic* is 1.05.

Now to find the over-all service rating factor for the performance in this operation—all six factors should be multiplied together:

CALCULATING THE OVER-ALL SERVICE RATING FACTOR

$$1.05 \times 1.0 \times 1.06 \times 1.06 \times 1.0 \times 1.05 = 1.23$$

Type of Run	Maximum Speed	Amount of Hills	Grade Maximum	Road Condition	Traffic	Over-All Service Rating Factor
						1.23

This over-all service rating factor of 1.23 is a product of: (1) All the special conditions surrounding the operation of the bottling truck; and (2) how these conditions influence horsepower. If the over-all rating factor came out to 1.0 (as will be shown in a later example), it would indicate the operation doesn't vary from the normal at any point, and the engine selected according to the requirements of the basic performance standard would be satisfactory. (City- or Suburban-Type Service—Straight Trucks. Performance Standard: 20 mph Up a 5½ Per Cent Grade.) But in the example here a grade performance requirement above the basic standard is needed—which is just what the over-all service rating factor of 1.23 shows. The required grade performance for the bottling company truck would be the basic standard grade of 5½ per cent multiplied by the over-all service rating factor of 1.23.

CALCULATING THE GRADE PERFORMANCE REQUIREMENT

5½	×	1.23	=	6.76
Basic Standard Grade		Over-All Service Rating Factor		Grade Performance Requirement

Performance requirements for the bottling operation in Midcity, Ohio, call for a truck that will be able to maintain a 20 mph speed up a grade 6.76 per cent. This, then, is the specific performance standard for the truck: 20 mph speed up a 6.76 per cent grade (net). A truck matching this standard will do the work easily and economically under the condition described in the example. Now that the specific performance standard has been determined, the information can be used to find the amount of horsepower needed for this performance.

Determining the Exact Horsepower

WITH the specific performance standard figured out, the next step is calculating the amount of power the truck needs to give this performance. When the horsepower is determined, Step 2 will be completed and the correct engine selected for the job. There are two ways to calculate the horsepower required:

1. By using a formula: Gross weight in pounds, times the sum of the grade and the road resistance in per cent, times the miles per hour, all divided by 375 times the efficiency in per cent, equals horsepower.

2. By using a specially designed slide rule known as the *Truck Performance Rule*.

In both the formula and the slide rule, the figures on gross weight of the truck are needed if horsepower is to be found. It is obvious at once that engine power needed will vary with the weight of the load and the weight of the truck itself. At this point in the application of a truck actual gross weight is not known, because the truck model and the wheelbase have not been selected. By the time these are determined, actual gross weight can be figured by adding together chassis, body, and payload weights. Of course, the whole problem is simple if the truck is going to carry the legal allowable gross weight. Then this weight can be used in the formula or in the *Truck Performance Rule*. But if the truck is carrying less than the legal limit, an estimate of the gross weight must be made at this point so that the horsepower of the engine can be calculated.

Through studying the records of thousands and thousands of truck operations and analyzing the weight relationships, a formula has been obtained for estimating the approximate gross weight.

ESTIMATING THE GROSS WEIGHT

$$\begin{aligned} \text{Gross weight for trucks} &= (\text{max. payload and body wt.}) \times 1.34 + 3,500 \\ \text{Gross weight for tractors} &= (\text{max. payload, trailer, and body wt.}) \times 1.14 + 4,500 \end{aligned}$$

... BY FORMULA

IN THE previous example of the bottling truck being used in Midcity, Ohio, the truck is assumed to have a body and payload weight of 11,500 lb. Working the formula like this: 11,500

times 1.34 plus 3500 gives a figure of 18,900 lb.—which is the estimated gross weight of the truck. Returning to the formula for calculating the horsepower, which was given a few paragraphs back, the gross weight was estimated. All the figures are known so the formula can be filled in and the exact horsepower calculated as shown here.

DETERMINING HORSEPOWER BY FORMULA

HORSEPOWER =

gross wt. lb. × (grade % + road resistance) × m.p.h.

375 × efficiency %

Information Required:

Gross wt. lb. 18,900

Miles per hour 20

Grade 6.76%

Efficiency 90%

Road resistance 1.25%

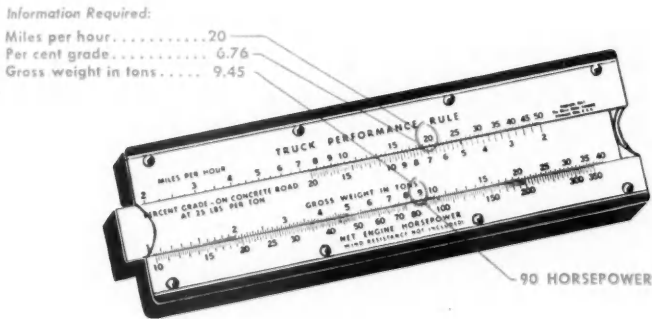
18,900 × (6.76 + 1.25) × 20

375 × 90

= 90 HORSEPOWER

... BY SPECIAL SLIDE RULE

THE figures may be used also in the second method of calculating the horsepower by *Truck Performance Rule*, as illustrated below. The slide of the rule should be moved until the 20 on the *miles per hour* scale is in line over the spot estimated to be approximately 6.76 on the *per cent grade* scale. Then 9.45 on the *gross weight in tons* scale is found. Directly below the 9.45 line is a 90 on the *net engine horsepower* scale—which is the horsepower required for the truck applied by the Beverage Bottling Co., Midcity, Ohio.



This completes the example used to illustrate how the horsepower can be determined for a truck operating under the specific conditions shown on the *Truck Requirement Analysis* form below. By following the steps, the final question of engine selec-

Good distribution, load

Wt. Front

Wt. Rear

2800

rpm

Engine: Model

Brake horsepower

90

Performance: Maximum road speed

miles per hour

Ability (hill loads): Maximum

% grade at

miles per hour

Transmission: Model

Number forward speeds

Direct lt.

Rev. from

Rear Axle: Model

Type

Ratio

Brakes: Type

tion is answered: The truck will need an engine of approximately 90 horsepower. With the finding of the 90 horsepower, the case of the bottling truck engine is closed. This has been an example of a strictly city-type operation.

Figuring Performance Standard

IN THE case of intercity-type service, several other factors must be taken into consideration in applying an engine. By using another example—this time a tractor-trailer operating between two cities—the method of horsepower selection will be demonstrated.

EXAMPLE 2. INTERCITY-TYPE SERVICE

IN THIS example, the Nonstop Hauling Co. operates tractor-semitrailers out of Central City, Mich. The first move in any example is, of course, getting all the information about the specific

operation for which the truck is intended. These facts have been obtained and recorded on the *Truck Requirement Analysis* (Fig. 2, page 12). The unit needed is a tractor-semitrailer, which will haul a normal maximum payload of 16 tons on an 11,000-lb. tandem-axle semitrailer between two cities about 300 miles apart over level country.

First, by taking the table, *Service Rating Factors for Intercity-Type Service*, the service rating factors for each condition are found the same way as in the first example. Looking up the first condition, *speed—mph—Maximum normal running speed or cruising speed*, it will be noticed that the gross vehicle weight is needed in selecting the service rating factor. An estimate of the gross vehicle weight can be made by using the formula, previously given, as follows:

ESTIMATING THE GROSS WEIGHT OF TRACTOR-SEMITRAILER

(Trailer and body weight + payload) × 1.14 + 4500 = gvw

(11,000 + 32,000) × 1.14 + 4500 = 53,520 lb. gvw

Maximum operating speed, or cruising speed, required by the truck to make its 300-mile run in 10 hours is about 45 mph. Under the heading of *speed . . .* on the table, a service rating factor of 1.00 is shown for 45 mph when the gross vehicle weight is 50,000 lb.

There are very few grades on the assumed route. Less than 5 per cent of the total mileage is spent in traveling uphill. So under *amount of hills* on the chart, the service rating factor is 1.0.

The next heading on the table, *per cent grade for steepest long grade*, will also show a service rating factor of 1.0 since the route is mainly over level roads with no long grades over 3 per cent.

Roads along the route are well paved, which is given a 1.0 service rating factor under the heading *road conditions*.

Traffic is not heavy on the highway and only a small percentage of the mileage is through cities. The service rating factor of 1.0 for light *traffic* may be used.

The condition titled *streamlining* doesn't apply in this example because the truck is traveling at speed of less than 50 mph. Now that all the conditions have been given ratings from the chart, the over-all service rating factor for the complete operation will be found by multiplying the 5 factors together as shown here.

CALCULATING THE OVER-ALL SERVICE RATING FACTOR

1.00 × 1.00 × 1.00 × 1.00 × 1.00 = 1.00

Speed Amount of Hills Grades Road Conditions Traffic Over-All Service Rating Factor

After the over-all service rating factor is found, the effect of this factor on the basic performance standard can be determined by multiplying the factor times the grade requirement in the basic standard. (Intercity-Type Service—Tractor-Trailers. Performance Standard: 20 mph. Up a 3 Per Cent Net Grade.)

CALCULATING THE GRADE PERFORMANCE REQUIREMENT

3.0 × 1.00 = 3.0%

Basic Standard Performance Over-All Service Rating Factor Grade Performance Requirement

Since the over-all service rating factor is 1.00 then the operation falls into a normal category, without any special conditions, which would affect the basic standard. Performance requirements for this hauling operation call for a tractor-semitrailer that will match the basic performance standard of 20 mph speed up a 3 per cent net grade. A unit that can give this performance will do the work easily and economically under the conditions described in the example. Next step is to calculate the amount of horsepower required for this performance.

CORRECT Application of Motor Trucks

Horsepower for Tractor-Trailers

TO FIND the horsepower required for the tractor in this example, two methods can be used: (1) Calculating the horsepower by the formula; or (2) using the special slide rule. In the first method, the known figures may be put into the formula and a horsepower determined as follows:

$\text{HORSEPOWER} = \frac{\text{gross wt. lb.} \times (\text{grade \%} + \text{road resistance}) \times \text{m.p.h.}}{375 \times \text{efficiency \%}}$	
Information Required:	Road resistance..... 1.25%
Gross wt. lb..... 53,520	Miles per hour..... 20
Grade..... 3%	Efficiency..... 90%
$\frac{53,520 \times (3.00 + 1.25) \times 20}{375 \times 90} = 134 \text{ HORSEPOWER}$	

On the *Truck Performance Rule* the problem of the amount of horsepower is solved by moving the slide until the 3 on the *per cent grade scale* is directly in line with the 20 above on the *miles per hour scale*. Then directly below the spot estimated to be 26.76 on the *gross weight in tons scale* is a 134 on the *net engine horsepower scale*—which is the horsepower required for the tractor-semitrailer needed by the Nonstop Hauling Co. of Central City, Mich.

Special Conditions

SO FAR, the examples have been of trucks that were operating mainly in city-type service, and in intercity-type service. There are many cases where the truck or tractor divides its time almost equally between city service and intercity service. The grade performance requirement should be determined separately for both types of service. Then the higher of the two grade performance requirements should be used in figuring the exact horsepower for the vehicle.

Two other trucking operations that might cause some question about engine selection are dump trucks, and short-haul trucks. Performance standard for dump trucks when used for excavating, construction, quarry, and mine work may be figured from Table 1, page 9, *Service Rating Factors for City or Suburban-Type Service*. The same table may also be applied to short-haul trucks on special projects and industrial plant work.

Choosing the Engine

NOW that the horsepower required by the job has been figured, the next move is selecting the engine from the manufacturer's specifications. An engine with a maximum horsepower approximately equal to or greater than the horsepower needed should be chosen. An engine output not more than 5 per cent under the required power may be considered approximately equal for this purpose. For example, the horsepower needed to meet the grade performance requirement of a job may be 142, while the truck manufacturer's closest model has an engine of 135 horsepower. The difference in this case is within 5 per cent, and the 135 horsepower engine would be satisfactory.

On the other hand, if the nearest available engine is one having as much as 25 per cent greater output than the calculated requirement, it may be satisfactorily used. If, for example, the calculated requirement for horsepower in a particular case is 145 and an available engine of 25 per cent greater, or 180 hp, is selected for use, with the other units of the truck properly coordinated, an economical application would result.

The engine whose performance is as close as either of the above examples to the calculated requirements will pay dividends in fuel economy because it may be made to operate the largest percentage of its time in the top third of its power output range. Gasoline economy is better in this range than it is at a lower percentage of maximum output. The reason for this is that fuel

Fig. 2. Portion of Truck Requirement Analysis form showing horsepower needed to meet the basic performance standard for Inter-City Type Service

economy of a gasoline engine varies both with the amount of load and the speed, the best economy always being near full load and at a speed a little under the maximum.

The engine choice was made this early in the correct application sequence to give a better foundation for the choice later of the truck model, and the other performance units—transmissions, axle, etc. Even though the horsepower has been determined, the selection of the engine at this point should be considered as tentative. Before the engine choice is definite, it should be checked against the model selected. These matters are for the next step—Step 3, *Determining Wheelbase and Chassis Model Size*—which follows in the next issue.

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Next Month: Step 3

"Determining Wheelbase and Chassis Model Size"

Up to this point, all information about the job that a particular truck is expected to do and how to calculate engine horsepower requirements to meet the needs of the job have been explained in detail.

From this point, the remaining steps will show how to determine and select the correct chassis, with special reference to such component units as the rear axle and transmission, as well as tires and other basic equipment. A complete list of all eight steps to be covered in this series will be found at the end of Step 1, the first installment, which appeared in the August, 1947, issue of CCJ.



Majority of Fleets Base Engine Overhauls on OIL CONSUMPTION



Excessive oil burning is signal for 57% to recondition engine while 32.03% indicate no tie-in. Only 11% of fleets flush engines regularly

Analysis by A. W. GREENE, Managing Editor, Commercial Car Journal

How Fleets Relate Oil Consumption to Engine Overhauls

57.15% overhaul when oil mileage drops, 32.03% do not consider oil consumption a factor

Depending on truck size 132 to 140 mpq is average consumption rate when work is scheduled

Tables 1A	ENGINE OVERHAULS BASED ON OIL CONSUMPTION				& 1B	CONSUMPTION RATE THAT DETERMINES NEED FOR OVERHAUL					
	Total Number Fleets Reporting	YES	NO	Partly		Consumption Range (Miles per Quart)			Weighted Average Miles per Quart		
		Per Cent	Per Cent	Per Cent		Light Trucks	Medium Trucks	Heavy Trucks	Light Trucks	Medium Trucks	Heavy Trucks
Vocational Groups											
COMMON CARRIER GROUP											
Local and Over-the-Road	43	46.51	44.19	9.30	20	25-250	30-250	30-300	108.42	103.88	112.04
FOOD DISTRIBUTION GROUP											
Bakeries, Dairies, Meats and other Food Products	47	70.22	23.40	6.38	33	40-500	40-500	40-300	137.81	144.92	149.47
GOVERNMENT GROUP											
State, County, Municipal, Federal	59	59.32	33.90	6.78	35	25-400	20-300	15-250	120.53	120.50	178.09
CONSTRUCTION											
Builders, Quarries, Gravel	6	66.66	16.67	16.67	4	100-300	100-200	50-100	160.00	140.00	75.00
INDUSTRIAL											
Local and Over-the-Road	2		100.00								
PETROLEUM GROUP											
Private Carriers	9	44.45	22.22	33.33	4	100-500	100-500	100-300	258.83	258.83	206.60
PUBLIC UTILITY GROUP											
Gas, Power and Water	34	61.77	23.53	14.70	21	75-300	75-300	50-300	132.50	134.60	115.29
RETAIL DELIVERY GROUP											
Other than Food, Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage	17	47.05	41.18	11.77	8	50-200	50-200	50	128.00	110.00	50.00
TRUCK RENTAL	5	60.00	20.00	20.00	3	50-300	50-200	50-200	150.00	116.66	175.00
TRUCK AND BUS FLEETS, Mixed	9	44.45	33.33	22.22	4	75	50-60	50-60	75.00	65.00	60.00
TOTAL AND AVERAGE	231	57.15	32.03	10.82	132	25-500*	20-500*	15-300*	134.44	132.51	139.97

* Lowest and highest consumption rate reported as determining need for overhaul.

WHEN AN ENGINE STARTS TO BURN OIL excessively, the majority of fleet maintenance men agree that the time has come to tear it down for reconditioning. This practice is being followed by 57.15 per cent of the fleetmen comprising COMMERCIAL

CAR JOURNAL's Board of Experts. Of the Board members whose practice differ with the majority, 10.82 per cent say that oil consumption is only "partly" a factor in their decision as to the time for an engine's need for an overhaul, and 32.03 per cent of this



same group indicate no relation between oil consumption and engine overhauls. These figures represent national averages. A breakdown, according to vocational groups, will be found in Table 1A.

However, a detailed analysis of the information supplied shows that, while a majority agree that oil consumption is an index to engine condition, the same fleetmen in that group are not in agreement as to what rate of oil consumption is excessive enough to pull an engine out of service for reconditioning. A glance at Table 1B, Page 55, shows that the specific consumption rate reported by fleets who base engine overhauls on oil consumption varies from a low of 15 to 25 mpq, according to size of truck, to a high of 300 to 500 mpq.

Of course, these figures indicate the extremes in the range, and, as such, are not representative of the general practice throughout the nation. A more accurate picture is obtained from the last three columns in the table which show the average consumption rate which fleets consider to be excessive, and at which they recondition their engines. This average consumption rate has been broken down not only by vocational groups, but, also, according to light, medium and heavy vehicles. The figures shown have been weighted to provide a true picture and show that, as a national average, engines in light trucks are pulled down when oil consumption reaches 134.44 mpq, medium trucks at an average of 132.51 miles, and heavy trucks at 139.97 mpq.

These facts were determined from information supplied by The Board of Experts in the recent survey of Engine Lubrication practices in the best fleet maintenance shops in the country.

Flushing Oils Not Generally Used

ANOTHER fact brought out by the survey is that most fleets, do not flush their engines when making oil changes. Of a total of 235 fleetmen reporting on this practice, only 11.06 per cent indicated regular use of flushing oils when draining lubricant from their truck engines. An additional 5.53 per cent reported that they used flushing oils but not regularly; of this number .85 per cent stated that they flushed their engines seasonally. A complete breakdown of these figures, nationally and by vocational groups, will be found in Table 2.

The fleets that used flushing oils, at either regular or irregular intervals, supplied a number of interesting facts concerning the methods used when flushing engines and the benefits attributed to the use of flushing oils.

The majority of fleets, 71.80 per cent, that use a flushing oil, let the engine circulate it throughout the lubrication system. Of the balance, 12.82 per cent used the high pressure circulating method, and the remainder did not specify. A vocational breakdown of these figures will be found in Table 3.

A very interesting summary of the benefits claimed for the use of flushing oils will be found in Table 4. Of the total reporting beneficial results, 76.92 per cent stated that flushing oils remove sludge deposits, 74.36 per cent claimed that flushing oils reduce dirt and abrasive particles in the lubrication system, 51.28 per cent found that flushing oils improved oil circulation, and 12.82 per cent stated that the use of flushing oils resulted in more mileage between drains.

In addition to those outlined above, other benefits, such as reducer engine wear and less bearing wear, were claimed by 7.69 per cent of the reporting fleet maintenance men; 10.25 per cent did not comment.

It is quite apparent that the fleets that use flushing oils are sold on them. The fleets that do not use flushing oil did not state if they ever had tried them. But, on the basis of user reports, it appears that experimentation on the part of individual fleets is in order—especially for those who want to be sure that their engines are free from any contamination before filling them with fresh oil.

Fleet Use of Flushing Oils

Table 2

Vocational Groups	Total Number Fleets Report- ing	Regular Use		Irregular Use	
		YES Per Cent	NO Per Cent	Sea- sonal Per Cent	Occa- sional Per Cent
COMMON CARRIER GROUP Local and Over-the-Road	43	13.95	81.40	.....	4.65
FOOD DISTRIBUTION GROUP Bakeries, Dairies, Meats and other Food Products	47	14.90	76.60	4.25	4.25
GOVERNMENT GROUP State, County, Municipal, Federal	60	3.33	90.00	.....	6.67
CONSTRUCTION Builders, Quarries, Gravel	6	33.33	66.67	.....	.....
INDUSTRIAL Local and Over-the-Road	2	.....	100.00	.....	.....
PETROLEUM GROUP Private Carriers	9	11.11	77.78	.....	11.11
PUBLIC UTILITY GROUP Gas, Power and Water	36	5.56	91.67	.....	2.77
RETAIL DELIVERY GROUP Other than Food, Dry Cleaning, Laun- dry, Newspaper, Coal and Ice, De- partment Stores, Beverage	18	27.78	72.22	.....	.....
TRUCK RENTAL	5	.....	100.00	.....	.....
TRUCK AND BUS FLEETS, Mixed	9	11.11	77.78	.....	11.11
TOTAL AND AVERAGE	235	11.06	83.41	.85	4.68

How Fleets Flush Engines

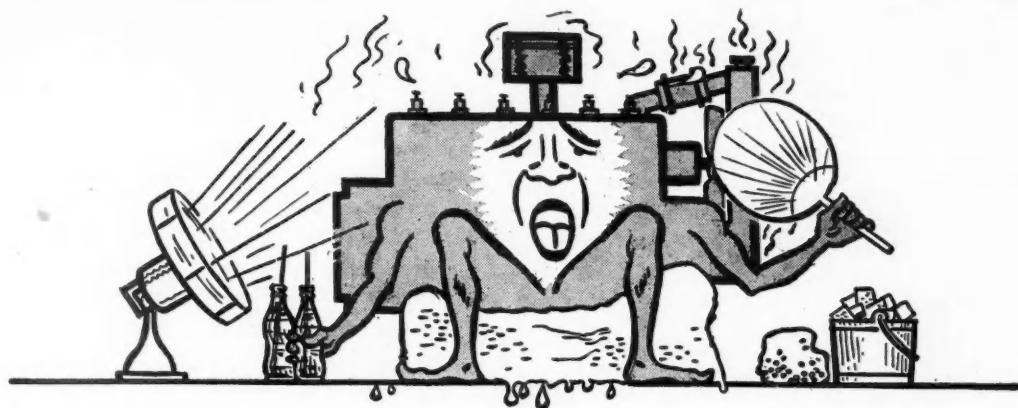
Table 3

Vocational Groups	Number Fleets Reporting Use	High Pressure Per Cent	Engine Circula- tion Per Cent	Not Specified Per Cent
COMMON CARRIER GROUP Local and Over the Road	8	.....	100.00	.....
FOOD DISTRIBUTION GROUP Bakeries, Dairies, Meats and other Food Products	11	18.18	63.64	18.18
GOVERNMENT GROUP State, County, Municipal, Federal	6	.....	50.00	50.00
CONSTRUCTION Builders, Quarries, Gravel	2	.....	100.00	.....
INDUSTRIAL Local and Over-the-Road	.....	.....	.....	.....
PETROLEUM GROUP Private Carriers	2	50.00	50.00	.....
PUBLIC UTILITY GROUP Gas, Power and Water	3	33.33	66.67	.....
RETAIL DELIVERY GROUP Other than Food, Dry Cleaning, Laun- dry, Newspaper, Coal and Ice, De- partment Stores, Beverage	5	20.00	80.00	.....
TRUCK RENTAL	.....	.....	.....	.....
TRUCK AND BUS FLEETS, Mixed	2	.....	50.00	50.00
TOTAL AND AVERAGE	39	12.82	71.80	15.38

Benefits Attributed to Flushing

Table 4

Vocational Groups	Number Fleets Report- ing Use	Removes Sludge Forma- tion	Reduction in Dirt and Ab- rasive Particles	Im- proves Oil Circula- tion	More Mileage Between Oil Drains
		Per Cent	Per Cent	Per Cent	Per Cent
COMMON CARRIER GROUP Local and Over-the-Road	8	75.00	87.50	50.00	25.00
FOOD DISTRIBUTION GROUP Bakeries, Dairies, Meats and other Food Products	11	72.72	81.81	72.72	18.18
GOVERNMENT GROUP State, County, Municipal, Federal	6	50.00	50.00	16.67	.....
CONSTRUCTION Builders, Quarries, Gravel	2	100.00	100.00	.....	50.00
INDUSTRIAL Local and Over-the-Road	.....	.....	.....	.....	.....
PETROLEUM GROUP Private Carriers	2	100.00	50.00	50.00	.....
PUBLIC UTILITY GROUP Gas, Power and Water	3	100.00	100.00	66.67	.....
RETAIL DELIVERY GROUP Other than Food, Dry Cleaning, Laun- dry, Newspaper, Coal and Ice, De- partment Stores, Beverage	5	80.00	60.00	80.00	.....
TRUCK RENTAL	.....	.....	.....	.....	.....
TRUCK AND BUS FLEETS, Mixed	2	100.00	50.00	.....	.....
TOTAL AND AVERAGE	39	76.92	74.36	51.28	12.82



Trouble Shooting

Cooling System Failures

Presenting causes and cures of common cooling system failures—including external and internal leakage, overflow losses, overheating, poor circulation and corrosion

IF WATER were as expensive as lubricating oil or gasoline, there would be little need for this article. However, until fleet operators realize that a great many road failures (as well as reduced engine life span) are a result of poor maintenance of the cooling system either directly or indirectly, such breakdowns will continue to be one of the biggest items of needless expense in fleet operation. Water added to a low radiator may not appear to cost much in terms of dollars and cents, but the increased wear, lowered efficiency and engine failures resulting from low and inadequate cooling systems send operating expenses to formidable heights. The implications arising from a prematurely low coolant level should be indicative of impending failures. Far too many fleets replace coolant and wait for serious engine damage before checking up on these conditions.

Water Loss Guide

THE DRIVER himself can do much to guard against cooling system troubles. His three checks will de-

by M. K. SIMKINS

Technical Editor
Commercial Car Journal

termine the practicality of operation and warn of impending troubles. He will check the condition of the coolant daily and report any rusty condition or dirty solution so that remedy can be effected. He will watch the temperature gage as a guide to efficient operation, and whenever the meter shows abnormal operating temperature, he will be concerned. And finally, he will watch the coolant level as an indication of trouble.



The variation of coolant level is one of the first and best indications of improper cooling. Evaporation is a very small factor in coolant loss,

and while some loss can be expected, the need for frequent refilling is one of the earliest indications of excess loss through boiling, overflow or leakage. Tests have proved that 50 per cent of losses are due to leakage, while loss through overflow pipe from boiling and foaming account for much of the remainder. These are abnormal conditions, and should be as much concern to the operator as loss of lubricating oil.

Clogging of the System

RECENT studies have disclosed that clogging of the cooling system accounts for 14 per cent of cooling system failures. Analysis of the deposits shows that they are made up of iron rust, water scale and grease. In this accumulation there is little that could not have been kept out of the system by systematic and preventive maintenance. Manufacturers insist that 95 per cent of the normal rusting action of water can be averted with the use of rust inhibitors. One hour's time, a simple flushing two or three times a year, (TURN TO NEXT PAGE, PLEASE)

COOLING SYSTEM TROUBLE SHOOTING COMMON FAILURES

Cooling System Failures

(Continued from page 57)

use of clean water and rust inhibitors coupled with proper routine for maintenance is the answer.

Cooling system restrictions are caused by foreign matter accumulating in the system. Such deposits consist of such things as rust and corrosion from the iron and steel surfaces. This is aided by some anti-freezes, mineral impurities and acids present in some water. Unsatisfactory cleaning solutions left in the radiator contribute further to corrosion. Oil and grease are introduced into the system in several ways, the most common of which is through the lubricating nipples of the water pump and leaks in the oil cooler. Water scale is deposited through impurities in water and aided by overheating and poor circulation. Such impurities are precipitated and deposited on the inner surfaces of the system, especially in fine passages and in the radiator core. And finally, foreign matter enters the system through the use of dirty water or water with organic or vegetable matter in it. This type of water accelerates clogging of water passages.

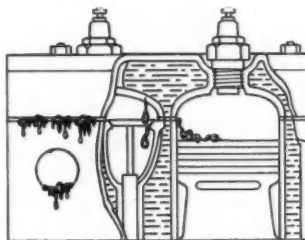
Dirt and water scale not only impede circulation but also cut down heat dissipation in two places—from the cylinder walls to the coolant, and from the water through the radiator to the air.

Tests for a restricted system can be made by accelerating the engine and noting the rise of liquid level in the radiator. With the level adjusted to proper heights, the coolant should not rise rapidly and flow out the overflow pipe upon rapid acceleration and high speed. If this happens, it is a sign that the radiator core is restricted. Sometimes this condition is a result of dislocated radiator top baffles. It may be the result of deteriorated hoses, when bits of rubber have been carried over into the top of the radiator by the action of the pump.

External Leakage

STRANGELY enough, the most frequent cause of liquid loss is external leakage. Studies show that neglected leakage causes over 45 per cent of cooling system failures. In

most cases leaks occur at easily accessible spots such as at the hoses, water pump shaft, water jacket joints, cylinder head and drain cocks. Periodic inspection should locate this condition before it has caused serious trouble.



Inspection should be made daily and preferably when the engine is cold. Small leaks which show dampness when cold may not be evident on a hot engine due to the rapid evaporation of the liquid. Stains on the water jacket, head or radiator will immediately point to the offending spot. For example, a gray-white or rusty spot will indicate leakage at that point and will signal for careful inspection. Such stains are usually corrosion products carried through leaking crevices and left after the coolant has evaporated. White spots on the fins of the radiator may indicate corrosion leakage and resultant loss when the vehicle is running and vibrating.

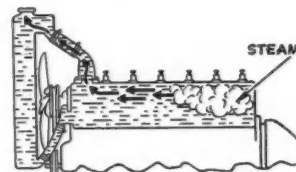
Probably the greatest cause of external leaks is due to extreme stresses and strains set up in the joints by wire changes in engine temperature, vibration from engine and road shock, deterioration of gaskets, wear of moving parts such as the water pump seals and corrosion of the parts themselves. It is usually not advisable to attempt to repair a radiator that shows excessive corrosion. Stop-leak preparations, too, are unsatisfactory in cases where leaks are due to corrosion. If the leakage is due to seam spreading, a competent radiator repair man should be assigned the work.

Overflow Losses

OVERFLOW losses from hot spots and local boiling are common complaints. Causes of this afterboil are boiling of the liquid due to overheating in certain locations in the

system. Clogging of the water passages in the jacket, especially between the cylinders and around the exhaust valves, is one of the most common causes of this condition. Modern systems have a pressure valve designed to permit higher operating water temperatures so as to decrease the size of the radiator by using a larger temperature differential between water temperature and air temperature, and in such cases, it is even more important that the pressure cap and neck or whatever valve arrangement is used, be functioning properly so as to be sure to maintain the pressure for which the system is designed. Sometimes the gaskets on these pressure caps dry out, corrode or become lost.

The system must be airtight if the radiator overflow tank functions properly. Otherwise the liquid overflowing into the tank may not return to the radiator. If either liquid or air leaks develop, the tank may overflow upon stopping and does not return to the radiator but overflows on the engine, introducing a fire hazard with the use of alcohol.



Much of the overflow loss arises from air or gas entrained in the cooling liquid. Suction of the water pump will draw air into the system from leaks on the low pressure side of the system. The circulated air will cause the liquid level to rise and some will escape through the overflow while the truck is being driven.

Overflow losses can be measured by use of a catch pot connected to the overflow pipe and making a test run over normal operating conditions. If losses have not been determined in other ways, a test of this type will be necessary.

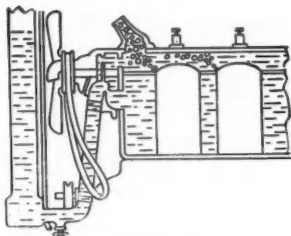
Internal Leakage

INTERNAL leakage, while not as prevalent, can be more serious than external leakage in cooling system failures. This type of trouble can be divided into: (1) leakage of the liquid into the engine, and (2) escape of combustion gas into the cooling system. Defective cylinder head joints account for the greatest

percentage of these troubles. Such conditions are a result of cracked heads, warped blocks, defective head gaskets and improper head tightening.

Internal leakage may not only cause serious engine damage, failure from overheating from low coolant level, but will cause crankcase sludge when the water escapes into the engine. The result will be sticking rings and valves. It will contribute to rust and corrosion of engine parts and is a dominant factor in lubrication failures. While some moisture can be removed by the crankcase breather and ventilating system in warm weather, cold weather driving with internal leaks will result in sludge formation and early engine failure.

Internal leakage can be detected by accelerating the engine with the water pump disconnected and the thermostat out, watching for air bubbles in the top of the radiator. It may be necessary to jack up the rear wheels of the vehicle and put the engine under load with the emergency brake in order to locate small leaks which would not appear under normal conditions. To determine whether the gas bubbles are due to escaping combustion gases or to air leaks on the intake side of the pump, light oil can be injected into the carburetor and the bursting bubbles checked for the presence of smoke.



Another test for exhaust gas can be made by applying air pressure through each spark plug hole with piston at top dead center on the compression stroke, noting air bubbles or the rise of liquid level in the radiator. If this occurs, it will point to damaged gaskets, block or head.

Another indication of internal leakage is a rising oil level as noted on the dip stick—showing that water has probably entered the crankcase from a leak.

Water Pump Checks

INSPECTION will not always show up leakage in the water pump since the suction of the pump will

TROUBLE SHOOTER'S CHECK LIST

I. EXTERNAL LEAKAGE

Loose, defective hose clamps
Defective rubber hose
Broken radiator seams
Worn water pump shaft, seal, bearing
Corrosion perforation of water tubes
Loose core hole plugs
Damaged gaskets, pump, cylinder
Warped cylinder head or block
Cracked cylinder head or block
Corrosion perforation of freeze plugs
Damaged cooling element

II. INTERNAL LEAKAGE

Warped cylinder head or block
Damaged cylinder head gasket
Deteriorated wet cylinder sleeve seals
Cracked cylinder wall
Loose cylinder head bolts
Porosity of cylinder head (aluminum)
Broken joints in oil coolers

III. OVERFLOW LOSS

Steam formation at hot spots
Air entrainment from top tank turbulence
Air leak on suction side of pump
Foaming of cooling liquid
Defective radiator baffle plate
Exhaust gas leakage into system
Leakage of overflow tank
Defective radiator cap
Defective pressure valve in cap
Restricted passages in radiator

IV. POOR CIRCULATION

Clogged radiator core
Clogged water jacket passages
Stuck thermostat
Collapsed radiator hose
Pump impeller loose on shaft
Pump blades broken or worn
Slipping fan belt
Distribution tube dislocated
Inadequate cooling system capacity
Low or too high coolant level
Air leak in suction side of system

draw air in at the leak and prevent dripping. This is also true of all positions on the suction side of the pump. Tests for leakage at this point can be made by attaching a piece of tubing to the lower end of the overflow pipe, normalizing the engine and watching for air bubbles in a water bottle into which the hose has been inserted.

To check water pump pressure the upper hose can be compressed with the hand with the engine running at about 1000 r.p.m., and noting the pressure. However, if the liquid is being pumped rapidly to the top of the radiator, the pump action can be assumed to be okay.

Excessive aeration of coolant caused by air leaks can increase rusting of the iron as much as 30 times, while the presence of iron rust great-

V. OVERHEATING FACTORS

Causes listed in No. IV
Oil and sludge in system
Bent fan blades
Radiator air baffles out of place
Clogged bug screen
Coated radiator core fins
Obstruction in front of radiator
Low coolant level

VI. OTHER CAUSES

Incorrect ignition timing
Incorrect valve timing
Pre-ignition
Defective spark advance mechanism
Improper fuel mixture
Low oil level
Tight engine, bearings, pistons, rods
Defective heat control valve
Clogged exhaust or muffler

VII. OPERATING FACTORS

Dragging brakes
High sustained speeds
Overloading of vehicle
Driving in sand, snow, mud
Lugging engine on grades
Stop and go driving
Excessive engine idling

VIII. OVERCOOLING

Defective thermostat
Low speed driving
Inaccurate temperature indicator
Thermostat installed incorrectly
Automatic shutters not functioning
Defective heat control valve

IX. CORROSION

Electrolytic action
Air leaks in system
High temperature
Impurities in water
Lack of rust inhibitor
Improper draining and service

ly accelerates the corrosion of copper and brass in other parts of the system. Much of the pump leakage can be attributed to rust in the liquid, which acts as an abrasive on the seals of the pump. In addition, rust particles can contribute greatly to premature shaft wear for the same reason. Most pump failures are due to a loose fan belt, worn impeller blades, worn pump housing or shaft wear. The impeller may become sheared especially if the system is allowed to freeze in winter. Corrosion and natural wear combine to cause early wearing away of the impeller blades.

Thermostat Checks

IT should be remembered that sludge, dirt and corrosion in the cooling system materially affect the

(TURN TO NEXT PAGE, PLEASE)

Cooling System Failures

(Continued from page 59)

operation of the thermostat. Foreign material collecting on the unit acts as an insulation, permitting it to operate at a higher temperature than that for which it was designed. This may be the cause of an overheated engine. Thermostats should start to open at least 20 deg. below the normal boiling point of the alcohol solutions used as a coolant, but certain anti-freezes and some design of engines may require a higher differential. Many operators are tempted to operate without thermostats during the summer months, but the danger of overcooling is just as great as that of overheating. Thermostats are given the blame for many conditions caused by other failures, and if tests prove the unit is okay, it must be replaced, not laid away until winter.

Testing of the thermostat for opening and closing temperature can be made by suspending the unit in a pail of water with an accurate thermometer and heating the liquid. Every mechanic will know how this is done.

The Distributor Tube

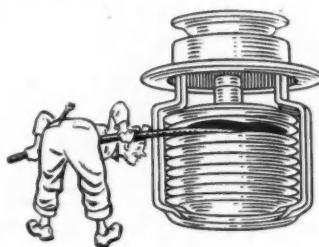
ANOTHER cause of cooling system failures can be found in the water distributor tube. Rust and corrosion frequently attack this sheet metal tube located lengthwise in the engine block in the water jacket. If the tube becomes dislocated or deteriorates, or if the holes become clogged, water will not be directed to the block properly, and localized hot spots will develop. Cooling will be spotty and valve troubles and even heat cracking of the head or block may be the result. Manufacturers recommend inspection of the tube every 15,000 miles and replacement upon engine overhaul.

Overcooling Effects

LOW operating temperatures result in overcooling of the engine with excessive gasoline consumption, crankcase sludge and excessive wear of engine parts. In addition, clogging of the oil screens may result in lubrication failures, especially when there is no relief or by-pass. Most engineers agree that the cylinder wall

temperature must be at least 160 deg. in order that the moisture, a by-product of combustion, can be evaporated before it reaches the crankcase. Temperatures lower than this will allow for dilution when moisture and excessive gasoline escape to the crankcase.

As is well known, a great percentage of engine wear develops upon starting and during the warm-up period before the lubricant has had a chance to cover the moving parts with a film of oil. If the engine does not warm up quickly or reach normal operating temperature, rapid wear will take place for this reason.



Overheating Effects

SOMETIMES engines run hotter after overhaul. This is due to the fact that the scale formation normally formed when water heats has dried up with the draining of the system, cracked and peeled off. After refilling, the scale deposits have been carried to the small water passages, where they have become lodged, causing restrictions and hot spots in the block or radiator. Certain types of heating after engine overhaul can be laid to the increased friction of new parts, but if the system is cleaned properly and the engine is broken in properly, there is little danger of damage from this condition.

Lime formations are caused by boiling of the liquid, when minerals present in all water in varied amounts will be deposited on the surfaces of the block. Lime deposits reduce heat dissipation, increase insulation of the surface and thus create more heat in a vicious cycle. Many times cylinder scoring, burned and warped valves, cracked blocks and cylinder heads are the result. This is why water must be kept moving and of proper temperature. Piston scuffing, ring stick-

ing and out-of-round cylinders result from unsatisfactory cooling of the engine parts. This is due to the fact that the surface of the cylinder becomes so hot that the oil film will not stay on the surface. Scuffing takes place when the rings slide over this portion of the wall, causing cylinder scoring.

Rust and sludge lodged around the cylinder walls will hold the heat in at these spots, cause uneven cylinder block expansion and cylinder distortion. This distortion in the cylinder will prevent the piston rings from maintaining contact with the cylinder wall and allow oil pumping and blowby.

Continuous running under high temperature conditions will eventually result in a breakdown of the lubricating oil, with increased wear of moving parts and the formation of lacquer and sludge.

Cleaning Procedures

FOR complete cleaning of the system, a material that will remove lime, hard rust, scale and grease is essential. If the system is clogged badly, there is no solution in the world that will remove the formation without damaging the radiator or block itself. Alkali solutions will remove grease but will not loosen the scale. Acids will not dissolve grease, and therefore cannot reach the rust scale underneath.

Draining and flushing removes only the detached scale and has no effect on grease or oil or lime formations. Pressure flushing with an air and water gun will produce more effective results, but is not the answer to a clogged system. An effective procedure for cooling system cleaning should combine mechanical means of agitation to dislodge entrapped particles and heavy sludge, with chemical cleaning for removal of grease, oil, rust and scale.

If the system is completely clogged, it will be necessary to remove the radiator, mechanically rod out the water tubes and boil it in a tank.

If the engine block is limed up, it may be necessary to remove the water distribution tube, the head, the side plate and scrape away as much accumulation as possible. Rotary files, scrapers and brushes will do more to remove this formation than chemical action if the deposit is hard.

VTRUCK fleet operators are not only far-sighted, but they are "hind-sighted" as well, as evidenced by the results of a recent CCJ survey of 109 fleetmen with regard to their choice of outside rear view mirrors.

The 109 fleets contacted accounted for a total of 23,511 outside mirrors, or an average of 216 per fleet. They reported that the most frequent causes of mirror replacements were: 1. accidents, 2. vibration, 3. driver carelessness. Returns show that an overwhelming majority of the fleets favor a round mirror 5 to 6 in. in diameter, and most of the operators desire a painted assembly rather than one of chrome. A slight majority favored the non-glare type over the plain units and the ball and socket type over the hinge adjustment. Most of the fleets reported that they attach their mirrors to the door hinge or the cab door with a clamp or screw attachment and use only one bracket for support. By far the greater percentage preferred a mirror set into rubber and then into a metal backing plate, according to returns.

Results of this survey show that: 1. fleets want better, more substantial rear view mirrors; 2. that they want larger units; 3. that they want conveniently adjustable assemblies to give a better view of the road; and 4. that they want more substantial brackets.

What are the reasons replacement of this accessory is necessary? Only two fleets of the 109 mentioned "old age" as the reason for replacement. Sixty per cent blamed accidents for the failure; 21 per cent reported "vibration" as the chief offender, while nearly 15 per cent gave "carelessness" as the reason for damage. Rust and corrosion was blamed by three fleets for premature failure, and "backing up" and "close spotting" accounted for the chief losses in seven of the organizations.

Of the 109 fleets represented, 39 per cent had one mirror per truck; 53 per cent used two mirrors per truck. Only one fleet used three mirrors per vehicle, while five organizations mounted as many as four mirrors on their trucks. For truck-tractor installation, 44 per cent of the fleets used two mirrors per unit.

The question was asked, "Do your drivers prefer 'round type' or the 'rectangular type' units?" Ninety-



Better Mirrors for Rear View Favored by Fleets

**CCJ poll of 109 fleets shows they want
larger, round type mirrors, easily ad-
justable and of more rugged construction**

one fleets, or 83 per cent, stated a preference for round mirrors; 14 per cent favored rectangular assemblies, while three fleets expressed no preference.

Thirty-eight per cent of those preferring round mirrors wanted one of a 6-in. diameter. Twenty-six per cent would be satisfied with a 5-in. mirror. Eight fleets specified 4-in. units, while one return asked for an 8-in.

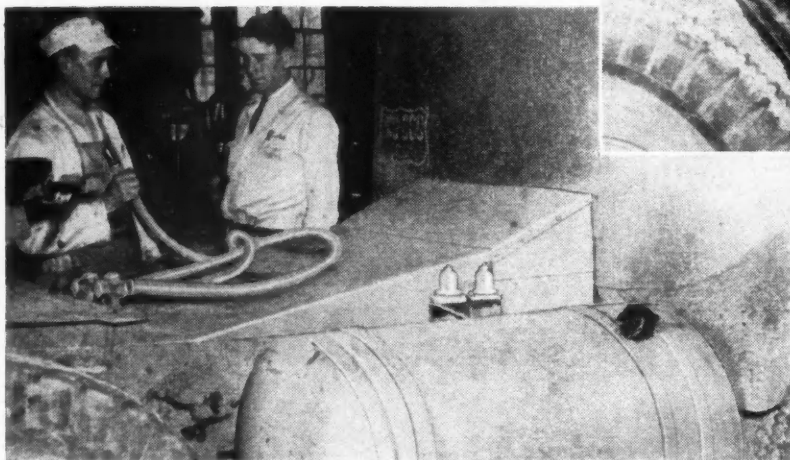
unit. Ten fleets did not indicate a dimension requirement.

Of those specifying the rectangular type, five preferred units 4 x 8 in. Ten other specifications ranged from 5 x 7 to 12 x 27 in. From the dimensions suggested, it would appear that a long, narrow type (larger than is available today) would be required by those desiring rectangular types.

(TURN TO PAGE 134, PLEASE)



Fleet changes include increasing bore or stroke to next larger standard engine size and switch to larger tires, electric pumps



Above. By piping air and electrical connections to point near fifth wheel hose lines are shortened. Two electric fuel pumps are used on each side. Top right. Square box in driver's compartment permits use of downdraft carburetor

Souping

WHEN sixty of our fleet of eighty trailers were replaced with tandems hauling eight to ten thousand pounds more payload, it became an immediate power problem in the maintenance department.

The ideal solution, of course, was simple—new tractors, selected from standard models designed for our loads. But such equipment was not available.

We then decided, as a practical expedient, to explore the realm of increasing the power of our present engines by increasing their displacement in a practical manner, such as

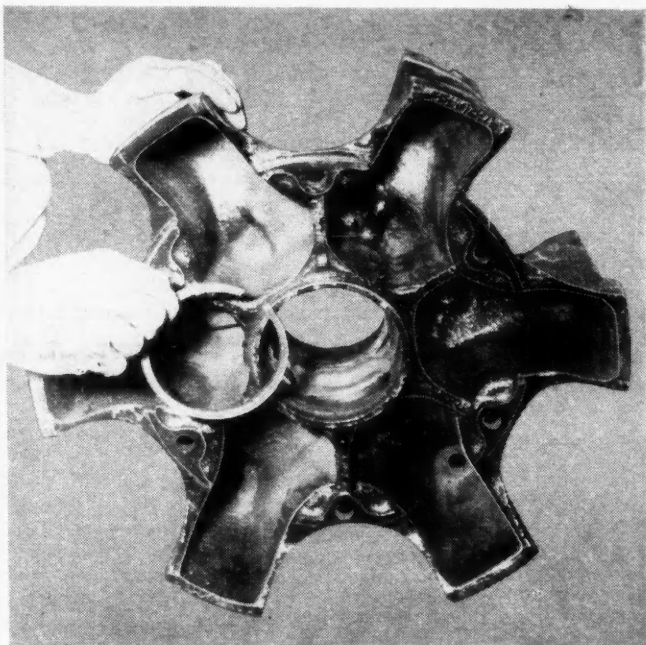
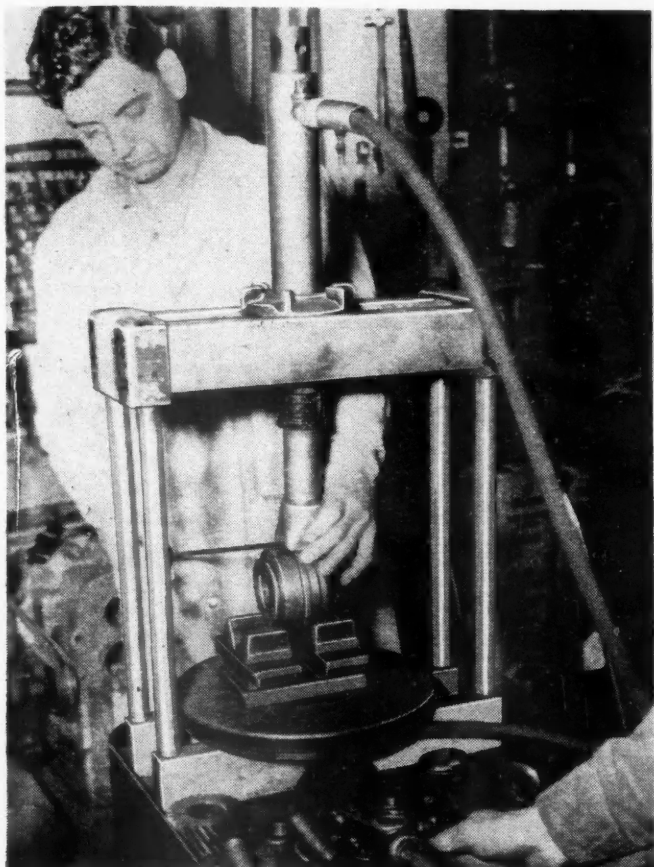
remodeling them to conform with the same manufacturer's engine in the next higher power bracket.

If this proved practical, we decided it would give us a working knowledge of what these trailers needed in the way of power and it would permit us to get maximum service and use out of our present equipment until new tractors were available. In this way we could gradually replace our old tractors and at the same time increase our stock of parts for our remodeled tractors and new tractors which might be added in the future.

We had a standardized load to pull. Mr. Kimbel had discussed future plans which indicated the desire of the company to standardize on trailers, loads, tractors, and equipment. This gave us a blueprint of present and future power requirements.

Changing to lower gear ratios would have permitted pulling the load with little trouble, of course, but costs per mile would have been higher.

We decided to increase the power of our present engines and also to establish boundary lines. For instance, we wanted to steer clear of specialized and expensive machine shop operations and odd-size parts. Whatever changes we made we decided must stay within the realm of



Above. Spacer moves whole wheel out $\frac{1}{4}$ in. Bearing surface on outside is machined to allow room for axle nut

Left. Wheel spacers can be shaped in a few minutes on hydraulic press. Pre-sized $\frac{1}{4}$ -in. key stock is used

Up Tractors

For Increased Tandem Trailer Loads

standard parts so that repair service could be obtained anywhere in our system at regular rates.

In planning these increased power changes on paper before actual labor and parts were involved, we decided that the economical thing to do would be to increase our power by changing our engines to the next higher power specification of the manufacturer—and do it at the regular overhaul period which would make the change possible at no increase in labor cost.

Parts stocked to service this engine would be the same standard parts that would be stocked to service a new tractor of that power. This would prevent acquiring an inventory of specialized parts that might be seldom used but which in-



by CLAYTON DAVIS

Maintenance Supt., Kimbel Lines, Inc.
Cape Girardeau, Mo.

creases the expense of operation.

Our success in these changes was so marked in the first engines that were rebuilt that we decided to explore the possibilities of the idea to see how far up we could go. On this experiment we made the necessary

changes in crankshaft throw and bore in a 318-cu in. engine to increase it to a 450 cu in. engine. Our experience with this engine indicated that one step up was the limit, such as our change from 318 cu in. to 360 cu in.

Details of Engine Changes

HERE are some of the particulars and specifications of the changes made.

One of our first changes was to increase the efficiency in our C-O-E tractors by changing the updraft carburetor to downdraft. On these models an updraft carburetor was used, apparently because there was not enough room below the floor boards for the downdraft type.

(TURN TO PAGE 122, PLEASE)

FREE

PUBLICATIONS

USE POSTCARD — NO STAMP NEEDED

A selected list of the latest literature—
catalogs, pamphlets, charts—chosen to help
fleetmen improve operation and maintenance

L124. Fleet Forms

Samples of Fleet Forms, the simplified system of maintaining accurate and complete records on fleets of vehicles, are now available to fleet operators. This copyrighted system enables any attendant to keep records up-to-date on each unit in the fleet, easily and quickly. The system is designed by a fleet accountant with many years experience in meeting problems of accurate record-keeping on fleets of vehicles.

Every operation that is to be performed periodically is clearly shown on the Cost and Service Record, and an attendant can see at a glance the last date that service was performed and when servicing is next due, for any unit. Lubrications, tire and battery inspections, oil and filter changes and other preventative inspections are easily scheduled and simple to follow with these Fleet Forms. Space is provided for quantities of gas, oil, anti-freeze used in each vehicle and other pertinent data. In addition, there is space for costs if the operator wishes to maintain cost records on each of his units.

Fleet Forms include, in addition to the Cost and Service Record, Gas Pump Detail Records, 1000 Mile (or 30 Day) Inspection Reports, Drivers' Receipts, Drivers' Trip Reports, Cashiers' Vouchers, Service Call Reports, Service Orders, Service Reports, En Route Service Reports and "Avoid Verbal Orders" pads.

Samples of all Fleet Forms are yours for the asking. They will be sent postpaid to any fleet operator requesting them. Just write L 124 on the free postcard.

L125. Cooling System

Now is the time to look at that cooling system, and here is the book to provide the mechanic with authentic technical information on proper servicing. Probably no other available publication so completely covers the subject as this 24-page, illustrated booklet on cleaning, flushing, rust prevention and anti-freeze.

Prepared for the Vehicle Maintenance Section Division of Motor Transport Office of Defense Transportation, this publication has been made available to fleet shops in the interest of improving preventive main-

tenance and attaining more satisfactory engine cooling.

Among the subjects covered are discussions of Preventive Inspection, a practical approach to catching failures before they cause damage. Various tests are outlined to show the mechanic how he can determine defects in the system, through air bubbles, overflow, color of the liquid and coolant flow rate.

Under Routine Maintenance, regular preventive inspection and maintenance service steps are presented—providing an excellent guide to the new or experienced mechanic in systematic service. Another section of the publication takes up a diagnosis of overheating and overcooling, giving remedial measures along with symptoms.

Corrosion, its prevention, clogging, and methods for cleaning are discussed in detail in another department, while properties of anti-freeze receives final attention in four informative pages.

This booklet is designed to help the fleetmen eliminate cooling system failures. It is offered through the courtesy of a well-known anti-freeze manufacturer. Write,

L 125 on the free postcard today and receive a copy for your files.

L126. Overhaul Manual

"Successful Reborning" is the title of this newly developed 12-page publication now available to fleetmen and their mechanics. Prepared as a practical guide to cylinder wall refinishing, the manual takes up such subjects as surface treatment, grit, removal, honing and surfacing.

In addition, a list of conditions responsible for a longer lived engine repair job are discussed in detail. The manual shows how to fit pistons, rings and piston pins, while tips on piston skirt beveling, piston lubrication, and how to break in a newly rebuilt engine will help the mechanic in his work.

Ten steps on engine rebuilding will do much to insure a smooth, free running engine. And finally, the manual discusses piston rings as the key to long satisfactory life from rebore jobs.

For a copy of this valuable maintenance guide, write L 126 on the accompanying postcard.

L127. Welding Data

The current issue of Eutectic Welder contains some valuable information on welding which will bring the reader up to date on the latest developments in gas welding.

According to the magazine, new rods with the flux already in them eliminate the necessity for a separate fluxing operation. The continuous presence of flux insures instantaneous bonding at the lowest possible temperature and is said to improve the quality of the deposited metal.

The eight-page publication is complete with illustrations showing welding techniques for representative jobs. Line drawings show how to apply the electrodes for a perfect welding job. The last page of the publication is a handy chart showing the rod number, main uses, bonding temperature, hardness Brinell, composition and corrosion resistance for the convenience of the welder.

Write L 127 on the free postcard for a copy of this informative pamphlet.



He's temporary until we can get the lift fixed.

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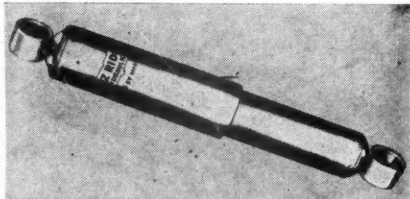
NEW

PRODUCTS

The newest in replacement parts, accessories, shop equipment, supplies—illustrated and described in brief for the fleetman

P47. Shock Absorbers

A new line of direct-double-action hydraulic shock absorbers, carrying the brand name E-Z Ride, has been announced by the Monroe Auto Equipment Co., Monroe, Mich., as a companion in the replacement market to the present standard line of Monroe Airplane Type direct-double-action shock absorbers.



Besides being the same direct-double-action type as the standard line, the new E-Z Ride shock absorber has many of the Monroe features of design and construction. It has the same guarantee as the Airplane Type—one year or 12,000 miles.

Conversion sets as well as single shock absorbers are featured in both the Airplane Type and new E-Z Ride lines. Conversion sets each contain two shock absorbers and the necessary brackets for fitting the Monroe type of shock absorber to cars not originally equipped with direct-action shock absorbers.

Use Free Postcard for More Details.

P48. New Fuel Filter

A new Ceramic Fuel Filter developed by Carter Carburetor Corp., St. Louis, Mo., is said to provide four-fold capacity to meet heavy-duty requirements of trucks, tractors and buses—keeping fuel pump and carburetors free from dirt, lint and other harmful matter.

In this compact filter, four scientifically designed Ceramic units of specially prepared porcelain are enclosed in a metal case. Particles as small as 1/25,000 in. are filtered out while a free flow of fuel is maintained.

The filter has a convenient drain plug at the side of the bowl near the bottom. The bowl may be removed for cleaning or replacing filter elements by unscrewing

the acorn nut at the bottom of the filter.

Model F614S is available for 1/4 in. fittings, while Model F643S is adaptable to 1/2 in. fittings. The unit may be mounted on the vehicle frame, engine or dash.

Use Free Postcard for More Details.

P49. Clearance Light

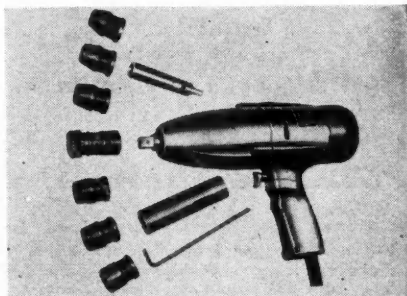
A new type of clearance light known as the Marko-Lite is now being produced by Brown Equipment & Mfg. Co., Charlotte, N. C. A feature of the new unit includes use of two bulbs for greater safety. With lenses set in pairs at sharp angle, the marker light can be seen from a great distance and from a wide radius. Simplicity of design marks other highlights of the marker.

Use Free Postcard for More Details.

P50. Impact Tool

Ingersoll-Rand, New York, announces a new universal electric, all-purpose Impact Tool.

Using standard attachments, it will apply and remove nuts—drill—ream—tap—drive and remove screws—drive and remove studs—extracts broken cap screws and studs—run wire brushes—do hole saw work—drill brick and masonry drive wood augers.



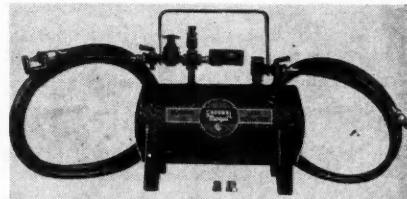
This new machine is designated as the Size 4U. It weighs 6 1/2 lb, has an overall length of 10 1/2 in., a free speed of 2000 rpm, and delivers 1900 rotary impacts per minute under load. It is powered with a specially designed reversible, universal, electric motor (3 amp.) that operates on 110 volt, ac-dc.

Use Free Postcard for More Details.

P51. Leak Detector

The Federal-Mogul Bearing Oil Leak Detector is now available in a new and improved model.

The detector makes possible an accurate test of all engine bearings and oil lines without tearing down the engine. The mechanic merely drops the oil pan and connects the detector between the engine



lubricating system and an air supply. A feature of the Federal-Mogul detector is its accurate maintenance of a predetermined pressure, so that every bearing is checked with the same accuracy.

The condition of the bearing is determined by the volume of oil leakage from each bearing. Improperly fitted or worn bearings and plugged oil lines are instantly located. The detector is equally valuable in quickly diagnosing work to be done, and in checking work after the overhaul, before the engine leaves the shop.

Use Free Postcard for More Details.

P52. Back-Up Light

A new back-up lamp is announced by The Teleoptic Co., Racine, Wis. It is No. 416 of the Teleoptic line of lamps—a reflector type unit for splash pan mounting. Its new design to latest clearance makes it especially adaptable to all new cars of 1946, and later models. It is also available (Model 418) with special bracket for body mounting. It can also be used as a loading light for buses, trucks and commercial vehicles. For this use special bracket for body mounting is provided.

The fluted lens transmits a long wide beam which brings out all objects without binding, according to the company.

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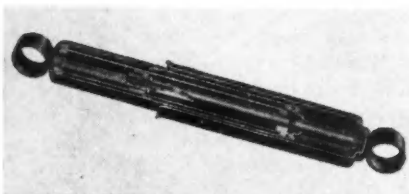
NEW PRODUCTS

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(Continued from Page 65)

P53. Shock Absorbers

The Houde Engineering Division of the Houdaille-Hershey Corp., Buffalo, N. Y., is now producing a new line of direct action type shock absorbers, husky to protect it against cracking or breakage. Both the combination orifice and coil spring overload rebound valve and the foot valve are non-aerating, and a baffle ring prevents the aeration of the fluid in the reserve reservoir.



The shock absorbers are calibrated, filled and permanently sealed at the factory thus eliminating all adjustments and servicing.

The working cylinder of each instrument is highly polished to close tolerances while the polished, chrome plated piston rod operates through guides of long-wearing bearing metal.

Use Free Postcard for More Details.

P54. Fire Fighter

American-LaFrance-Foamite Corp. of Elmira, N. Y., has announced a new product called Pentrate for making water wetter.

When added to ordinary water it gives the combined solution speedy penetrating and spreading qualities much superior to water itself, and therefore, more effective in fire fighting.

Pentrate is no more injurious to metals or wood than water itself. It has even less corrosive effect than water and can be used effectively with salt water or calcium chloride solutions.

Use Free Postcard for More Details.

P55. Engine Lift

The new Bulldozer Engine Lift made by Wire and Cable Div., Wind Turbine Co., West Chester, Pa., is a handy, two-arm galvanized wire rope sling designed for quick, accident-proof attachment to any engine. Engineered with a working load of 2500 lb, the lift eliminates the hazards of homemade slings and cuts time on any engine overhaul by making a simple one-man job of any motor removal with the use of standard hoisting equipment, according to the manufacturer.

Each arm of the lift has a heavy formed

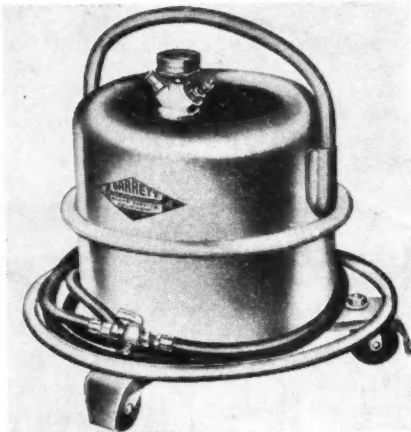
clip which is securely bolted to the engine head. Thimbles protect the wire at points of wear. The engine can be removed easily and safely within a few moments, and subsequently replaced with equal facility.

Use Free Postcard for More Details.

P56. Brake Bleeder

A new streamlined hydraulic brake bleeder and fill tank that eliminates pedal pumping and makes bleeding and filling a one-man job has been announced by Barrett Equipment Co., St. Louis.

Several new features have been incorporated such as a novel shut-off valve that prevents air entering the system when fluid is low, and a positive pressure gage safety valve. In addition, the 2½ gal tank is equipped with special adaptors to fit all standard master cylinders. Has a 10-ft oil resistant hose fitted with control valve.



Of welded steel construction, the tank is finished in bright red and white baked enamel, and weighs only 13 lb.

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P57. New Shuler Heavy-Duty Front Axle

This new front axle, developed by Shuler Axle Co., Inc., Louisville, Ky., increases load carrying capacity for Chevrolet trucks. Designated as Model No. 4Y6A, it has a rating of 7750 lb. Equipped with Wagner hydraulic brakes, 2¼ x 16¼ in., the axle is made with oversize heat treated forgings to insure a strong and rugged assembly. Track dimension, 57¼ in. with 5½-in. wheel dish. King pin dimension, 51½ in., with 1⅞-in. diameter pin. Spring centers, drilled as requested. Hubs are ten-stud, 7¼ in. and ⅝-in. diameter wheel studs can

P58. New Extinguisher

A new 4-lb. model dry chemical fire extinguisher, known as the Ansul 4, is announced by the Fire Extinguisher Division of Ansul Chemical Co., Marinette, Wis. The extinguisher, 19⅞ in. long and 3½ in. in diameter and light in weight, is designed for use by inexperienced operators, according to the manufacturer.



It is suitable for extinguishing fires in flammable liquids, gases, solids and electrical equipment and also for controlling fires in ordinary combustibles. The extinguishing agent used, Ansul Plus-Fifty Dry Chemical, is claimed to be non-toxic, non-corrosive, non-abrasive and a non-conductor of electricity.

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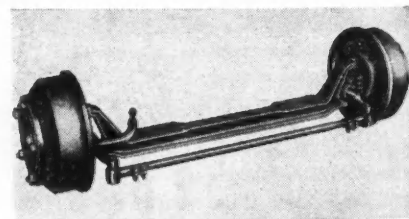
P59. Fifth Wheel

Featuring "centerline draft," the new Austin 5th wheel for trailer-tractor coupling, manufactured by the Austin Trailer Equipment Co. of Muskegon, Mich., is designed to eliminate trailer over-ride on down-hill grades. Driver fatigue and "kidney punching" due to the chucking action of ordinary 5th wheels are said to be greatly reduced.

All pulling forces are located in the same plane. Yoke type support brackets and rocker shafts, mounted in full floating rubber bearings to further reduce shock transfer from trailer to tractor, are positioned in a direct line with king pin draft, reducing parts strain to a minimum.

Another distinct feature of the new Austin 5th wheel is the side pull release mechanism that eliminates the need for "getting under" to release the trailer from the tractor. With the side pull release, the operator merely stands besides the trailer and, with a natural, direct outward pull, releases the king pin lock.

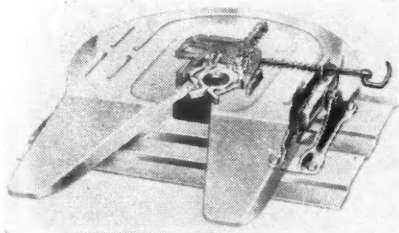
The king pin lock itself has been modified to provide a greater margin of safety with three-way locking action. A spring



be supplied. The new axle is available with longer track and a drop in center if required.

Use Free Postcard for More Details.

loaded cam locks the yoke in position, tails of the jaws are locked in place by the yoke plunger, and extension arms on the yoke move down outside of the jaws to wedge them together in the locked position. King pin jaws grip the king

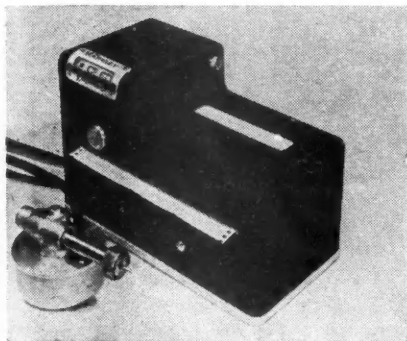


pin through full 360 deg. contact and are so constructed that either jaw will draw the load safely should the other break.

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P60. Trip Register

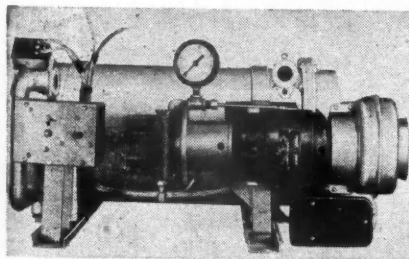
The Markley Register, a new accounting device for use on motor vehicles to give an automatic and permanent record of mileage, speed, stops and similar data, with applications wherever time and count are important, has been developed by the Markley Corp., Plainville, Conn.



On trucks or automobiles the register provides immediate, documentary information on miles traveled, time spent in traveling them and activities during the day.

The register is activated by a pick-up attached to the transmission. This attachment replaces the speedometer cable which is then hooked up to a spindle on the pick-up. The register itself is mounted alongside the driver. Installation on the average car or truck can be completed in one hour or less. In service, the register consumes only a negligible amount of current from

P61. Gasoline Heater for Pre-Heating Engines



Fluid Heat Model 77 Coolant Heater designed by Anchor Post Products, Inc., Baltimore, Md., develops 77,000 BTU's on about $\frac{3}{4}$ gal. fuel consump-

tion per hour and functions entirely independent of engine or vehicle operation. Available in 12 or 24-volt models—burning gasoline or diesel fuel—the heater when hooked into the engine coolant and vehicle's heating system is said to maintain engine temperatures at efficient and economical operating levels.

Use Free Postcard for More Details.

P62. Automatic Drain

A new type of automatic valve for removing water, oil and sludge from compressed air tanks has been announced by Pneumatic Controls Corp., Des Moines, Iowa.

Known as the Mois-Chur-Matic Assembly No. 847, the device is designed for easy installation on trucks and buses.

Operated pneumatically, the unit is said to remove all moisture as fast as it condenses in the receiver tank; eliminates the necessity of bleeding tanks and requires no other moisture traps or filters. The manufacturer claims that the unit cannot become non-operative due to freezing since it is self-cleaning and leaves no moisture in the valve seat to freeze.

Use Free Postcard for More Details.

P63. Portable Crane

The Manley Mfg. Division of the American Chain & Cable Co., Inc., York, Pa., announced a new and different type crane—the UFC-2, Universal Floor Crane, with attachments. It is a modern, streamlined tubular steel, portable crane of a 2-ton capacity with an adjustable boom. The power of the boom increases proportionally as it is shortened and has a capacity range from 2000 lb to 4000 lb.

A self-locking worm drive winch holds the load in any position—no pawls or special locks are needed. A simple device hoists out rear engines, while a forklike arrangement facilitates removing duals.

Use Free Postcard for More Details.

P64. New Tachometer

The Jones Motrola Corp., Stamford, Conn., has developed a new type tachometer of the centrifugal type, with electronic control.

By setting the red indicator hand, the maximum speed of the equipment can be controlled. When the predetermined speed is attained, the electronic device actuates a relay that will shut off the equipment, ring a bell, flash a light.

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P65. Fast Charger

Thomas A. Edison, Inc., Kearny, N. J., announces a new rapid battery-charger which is said to be handy, compact, efficient, rugged and sells at a low price.



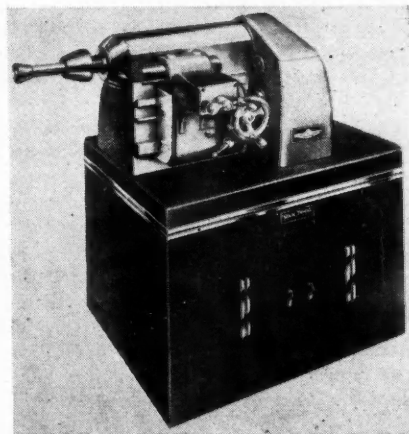
The EC-10 charges at 80 amp. It is equipped with an electric time-switch, a self-healing heavy-duty rectifier of copper sulphide and a 110-volt 60-cycle transformer.

Use Free Postcard for More Details.

P66. Brake Drum Lathe

VanTool, Inc., Philadelphia, Pa., has introduced a new brake drum lathe developed specifically to fill the needs of dealers, general repair shops and other automotive maintenance establishments.

The VanTool Lathe features the following developments: It is equipped completely with Timken bearings for smooth, long-life operation. It boasts a worm drive that assures a highly efficient transmission



of power. A $\frac{3}{4}$ hp. motor allows an extra margin of power to handle excessive loads.

A new development of the VanTool Lathe is its "chatterproof" feature that automatically eliminates chatter of any kind during the turning operation.

Specifications include: feed screw calibrated to remove .001 in. on diameter of drum; cabinet dimensions, 18 in. x 28 $\frac{1}{2}$ in. x 24 in.; oil-sealed gear box for main lubrication; $\frac{3}{4}$ hp. single phase 110 volt motor; spindle height 34 in.

Use Free Postcard for More Details.

P67. Motor Oil

A new cold weather motor oil engineered to give dependable lubricating performance at temperatures as low as 30 deg. below freezing has been announced by the Amalie

(TURN TO PAGE 170, PLEASE)

DETROIT

Mechanics Cuss '47 Cars

Something New In Fans

Nash Trucks Not in Sight

Mechanics Cuss '47 Trucks

New model 1947 trucks already announced admittedly are beautiful to behold with their massive hoods and other sheet metal work, but service mechanics are something less than thrilled with the styling innovations. The superintendent for one large truck company reports his maintenance men have become quite profane about the difficulty of access to the engine compartment even when making comparatively minor adjustments. The mechanics grouse that they have to "have a step ladder even to get over the fender into the engine compartment." One mechanic said that he had to remove about 15 bolts to get at the carburetor for adjustment. While that sounds a bit far fetched, it certainly is true that new designs have done little to ease the job of the service mechanic. One operator had an interesting comment about the greater use of sheet metal. He pointed out that trucks normally take a good deal of banging around and that sheet metal repair work is much more expensive with the new models because there is more of it.

Parts Prices May Jump

Truck manufacturers are keeping pretty quiet about the possibility of an increase in replacement parts prices but, when backed into a corner, some will admit privately that there is a possibility of prices going up. One company says that it has already absorbed several cost increases on replacement parts but, if prices from vendors go up any more, it will have to pass the increase on to the customer. Ford says that some engine parts, such as rings, valves, pistons, and bearings are in greatly improved supply but that there still are shortages in other categories.

Wire Cord Tires Being Built

As late as last spring, there still was great difference of opinion among truck tire manufacturers about the merits of wire cord tires. However, in recent months there seems to be more optimism about this type of casing. All major companies, however, have had development programs with wire cord tires under way for several years. Goodrich announced recently that it had



by LEN WESTRATE

CCJ Detroit News Editor

started production of wire cord truck tires. Firestone and U. S. Rubber also are known to be building this type of tire, and Goodyear undoubtedly also is producing some of the units, at least for test purposes. While there undoubtedly still are problems to be licked, latest reports indicate that the major producers are not at all pessimistic about the possibility of wire cord tires for heavy-duty operation in the not too far distant future.

Something New in Engine Fans

A report circulating in Detroit says that several automobile companies are working with a new type thermostatically controlled engine fan. In operation, it would cut in at a specific engine temperature and would disengage when the temperature dropped to a low range point. The fan would enable the engine to warm up much faster and engineers also believe that in many cases high speed driving and extremely cold weather will force enough cold air through the radiator to keep the engine temperature up to normal without the use of the fan.

Nash Trucks Not in Sight

Although Nash announced nearly a year ago that it would enter the truck field with models ranging up to 1½ tons, very little has been heard about this development recently. Although there is no official confirmation, the best guess is that the new truck will not come out this year. Manufacturing difficulties are such that it would be difficult for Nash to divert material into trucks when it can't get enough to keep its passenger car lines going at full speed.

New Valve Guide for '48 Fords

We hear that Ford is going to a one-piece tubular valve guide in its 1948 models in place of the present split guide. The one-piece guide is said to give better heat distribution, an improved fit, and better oil control.

DISPATCH

Truck Brakes to Be Rated

Bumper Study in SAE's Lap

More Automatic Shifts

New Truck Preview

The new models which one large truck builder will announce late this year are said to incorporate some neat styling and safety features. For one thing, the fender lines will sweep back through the door panels like present passenger cars for a more streamlined affect. The cab will have rear corner panel windows and greater forward and downward vision from the driver's position behind the wheel. Another innovation is said to be a change in the steering mechanism to give the same turning radius to left and right. In general, changes will be principally toward greater safety and comfort for the driver.

Truck Brakes to be Rated

Watch for some developments soon on brake certification ratings by truck manufacturers. The idea has been kicking around for some time, and it is due to break soon. It would involve a manufacturer's certification, stamped on the metal specification plate that the truck of the stated gvw will stop within a specified distance at a specified mph. The manufacturers believe that if they don't take the initiative themselves, the various states will require it by law. When it comes, it also will put the onus on the operator if the brakes fail when the truck is loaded beyond its rated gvw capacity.

But No Heavy Bonded Linings

There is quite a behind-the-scenes difference of opinion among the various car and truck manufacturers about the most safe and satisfactory type of bonding agent to be used in bonding brake linings to shoes. They generally agree it is a coming development for passenger cars and smaller trucks, but still do not see eye to eye on the cementing agent. One company found that bonded linings produced drum noise, which must be designed out before the method can be adopted. Another says that it is going ahead cautiously on passenger cars and smaller trucks up to 1½ tons. Chrysler is using its Cycleweld bonded linings as standard equipment on ½-ton trucks, and it also is understood unofficially

(TURN TO PAGE 166, PLEASE)

V SCIENTIFIC MAINTENANCE as the means of reducing costs to offset the increase in wages and the necessity of reducing vehicle time out of service for maintenance were urged by past SAE President A. T. Colwell in a featured address at the two-day National West Coast Transportation & Maintenance Meeting held in Los Angeles the latter part of August.

In all, eleven papers, all on subjects dear to the hearts of fleet operators, were ably presented by competent authorities. Lubrication, chrome plating, shot peening, brake operation troubles, plastic bonding of brake lining, driver selection and training, trucks and trailer selection, and regulations, all important in economical fleet operation, were covered. Col. L. L. Beardslee, Supt. of Shops and Equipment, County of Los Angeles, was general chairman.

At the banquet meeting, A. T. Colwell, vice president, Thompson Products, Inc., enumerated the following phases of scientific maintenance:

1. Selecting and improving the proper vehicle for a given job.
2. Selection and training of drivers and other personnel.
3. Selection and installation of the most suitable equipment for handling work under repair, precision tools and inspection devices; all in a clean shop.
4. A thorough system of preventive maintenance.
5. Maintaining accurate records.
6. Operating for long-range economy, not first cost.
7. Proper timing for retiring old vehicles.

"Vehicles are bought to operate, not to repair," the speaker pointed out, "but as months pass by repair work very definitely must be done to maintain satisfactory operation. The various phases outlined should keep repair and down-time at a minimum by scientific planning and coordination of the entire operation, providing there is a workable program for that specific operation.

"Labor costs have mounted appreciably in maintenance work, and are still mounting. More work per man-hour must be accomplished. In this era the only possible way of achieving such a program is by labor-saving devices, and every manufacturing concern is actively study-

Scientific Maintenance

Keynotes SAE West Coast Meeting

Fleetmen and manufacturers discuss

all phases from shot-peening to

chrome-plating and from truck and

trailer application to brake operation

by R. RAYMOND KAY

CCJ West Coast Editor

ing the problem. It applies as well in maintenance work. The high labor rates of today will gradually drive marginal workers out of employment."

Light on Lubricants

IN the "Mechanical Wear, How to Reduce It" session, W. M. Sopher, Union Oil Co. of Cal., presented a highly technical paper on lubrication.

Among many important observations was the significant fact "lubricants undergoing physical and chemical change in service is quantitative rather than qualitative. Thus, the question is not so much . . . Has the neutralization number increased? . . . but rather . . . How much has it changed? Likewise, not so much . . . Has the kinematic viscosity of the oil increased? . . . but rather . . . How much has the kinematic viscosity changed?, etc.

"Comparative test work, both field and laboratory," the speaker said, "reveals rather interesting data. Using high quality, high viscosity index base oils, one series compounded while the other series were straight mineral oils, it was shown that in every instance the specially-compounded oils displayed a better "oil condition" at the expiration of 5000 miles of service, than did the

non-compounded base oil of the identical type at the end of 1000 miles service under like operating conditions.

"The basis of all machine design and production is efficiency," Sopher continued. "The economic or cost factors are always a matter of prime consideration to the operator of combustion engines. Fuel costs, maintenance costs and the cost of lubricants are all significant items influencing the overall efficiency of any combustion engine. If costs can be reduced in one phase without increasing costs at other points and horsepower output does not suffer, it appears that some progress, along the road to increased overall efficiency, can be made."

In discussing Mr. Sopher's paper, Rex Taylor, general manager, Cords Piston Ring Manufacturing Co., San Diego, said, "The problems of engine lubrication in military vehicles are essentially the same as those which confront commercial fleets, since military equipment is powered by regular commercial engines. Military experience proved that adequate lubrication could be accomplished by the use of one type lubricant, in three different grades, for all military vehi-

(TURN TO PAGE 158, PLEASE)

CCJ CUSTOM BODY SERIES

by **E. M. WESTBERG**
Body Designer

DESIGN NO. 7 . . OPEN PICK-UP BODY

THIS MONTH'S CUSTOM DESIGN features a streamlined pick-up body adaptable to a wide range of sizes and vocational uses, combining unique appearance with sturdy, long-life construction.

This body, of the same basic construction, can be built in sizes from 8 ft. long by 6 ft. wide to 16 ft. long by 8 ft. wide and still retain its unique streamlined appearance. In the wide variety of sizes, it can be used as a fleet repair and maintenance unit, a standardized emergency tire and repair service car, or as an emergency service car for both trucks and passenger cars.

Other vocational uses could be found in the plumbing field, building trades, on farms, and in any raw material delivery operation requiring a sturdy open top pick-up type body.

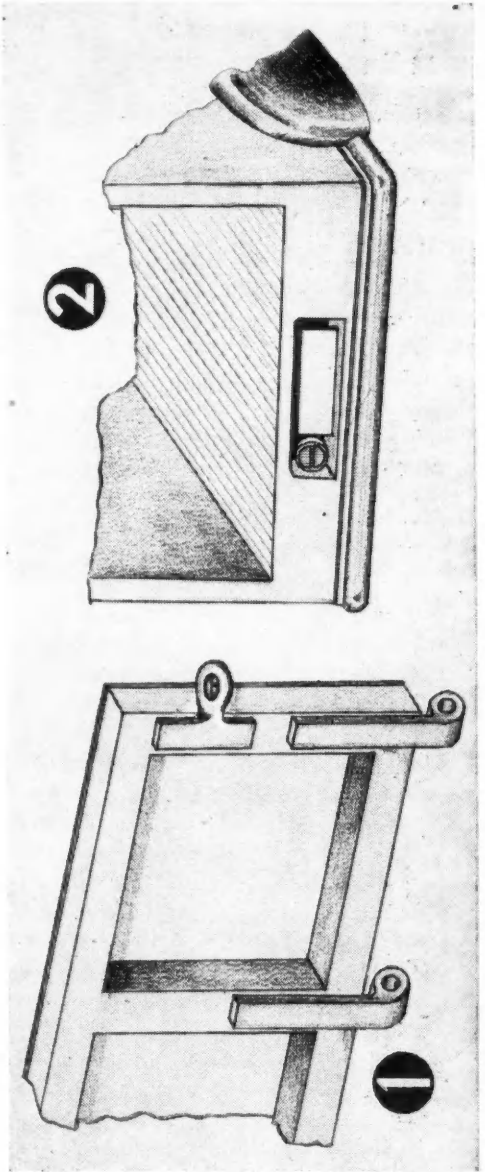
This body is of all steel construction, the basic structural section being a simple light-weight steel channel. It can be built of any of the lighter metals if so desired, and decorative panels such as stainless steel or corrugated sheets could be used for improved appearance.

Three of the more outstanding features are separately illustrated. Fig. 1 shows the extremely simple one-piece diamond plate tailgate construction consisting of a flat piece of diamond plate reinforced with the simple basic structure channel.

Fig. 2 illustrates a very effective, yet inexpensive, recessed license plate box. Fig. 3 shows an efficient rear-end arrangement. It is a full width recessed step with the tread portion of the step extending out over the rear bumper which is made of channel iron with very effective bumper guards at the outside ends.

This unit is adaptable for installation of air compressors, wrenches, hammers, spotlights, and other tire and service repair equipment. Other items readily installed for specific vocational uses include ladder racks, pipe racks, sliding front quarter panel doors for pipe loading openings, a variety of rope cleat locations for various load tie down conditions and removable shelves where tiered loading is required. The open side rail can also be used for load tie-down purposes.

This design lends itself well to either one or two color painting layouts and makes a very attractive unit when painted machine grey inside.



★ ★ ★ ★ ★

Starting with the June, 1946 issue, Commercial Car Journal resumed a prewar reader service on vocational body design which fleet operators can put to profitable use in improving the appearance of their fleets, increasing payload and efficiency in cargo handling.

In the past, Mr. Westberg has designed numerous bodies for CCJ readers. He is well known among eastern body builders and, having worked in body shops, knows the practical problems of body building.

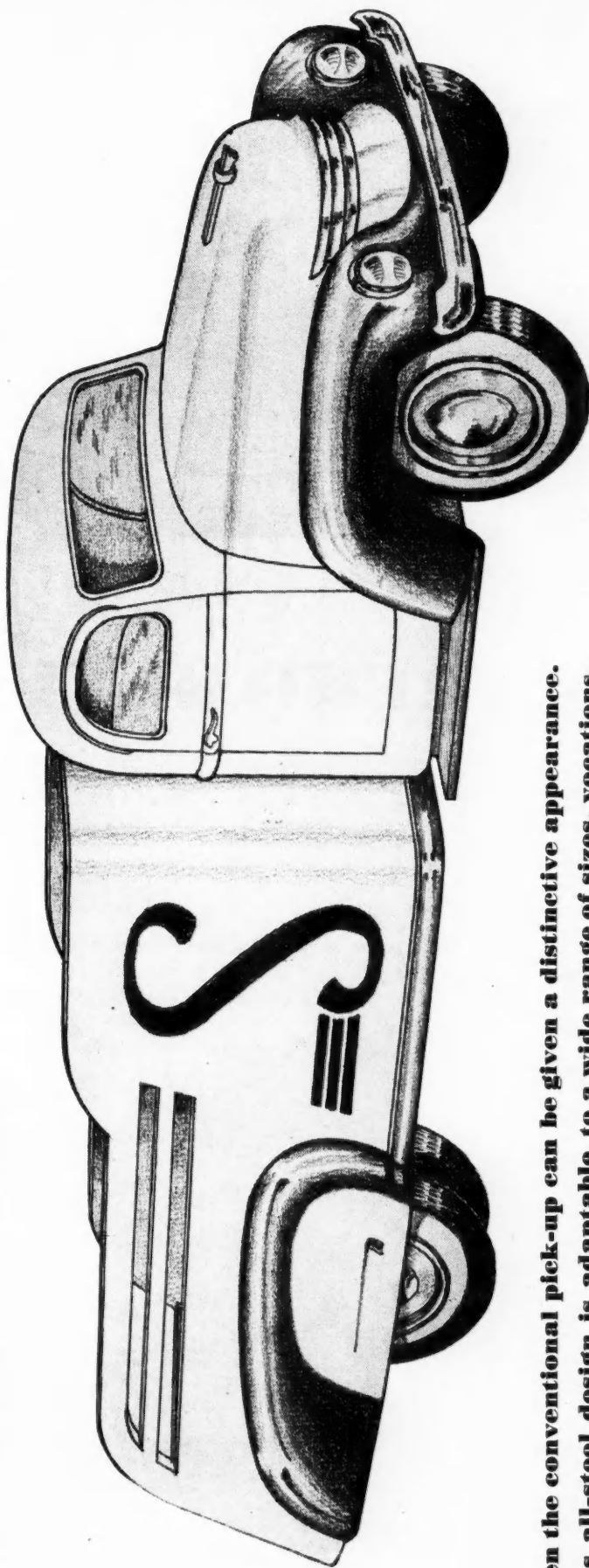
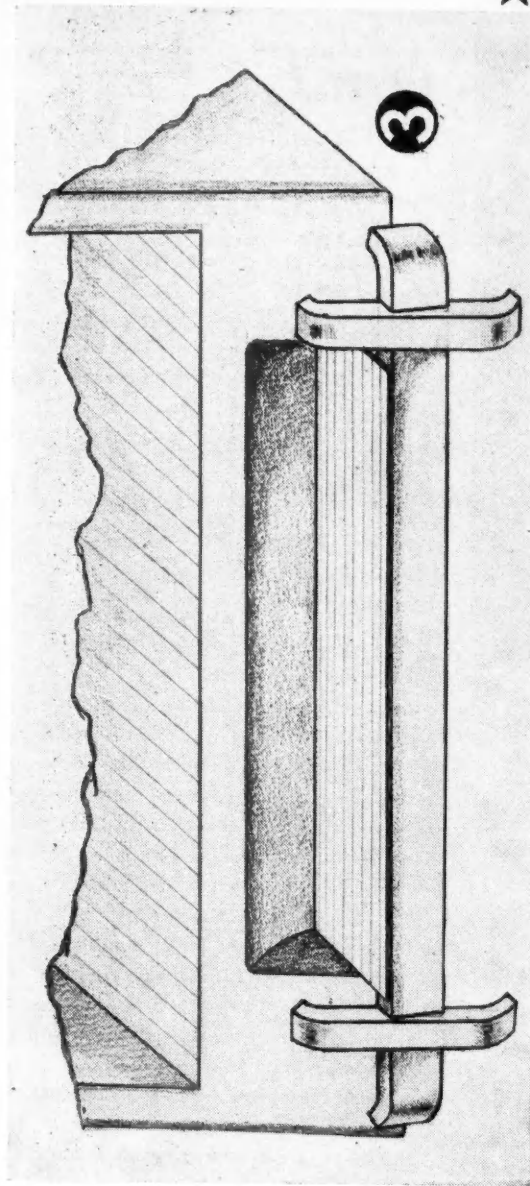
While these designs are copyrighted, arrangements can be made with the designer for procuring detailed construction drawings and consultation on specific problems. If such service is desired, write to Editor, Commercial Car Journal, 56th & Chestnut, Phila., Pa.

★ ★ ★ ★ ★

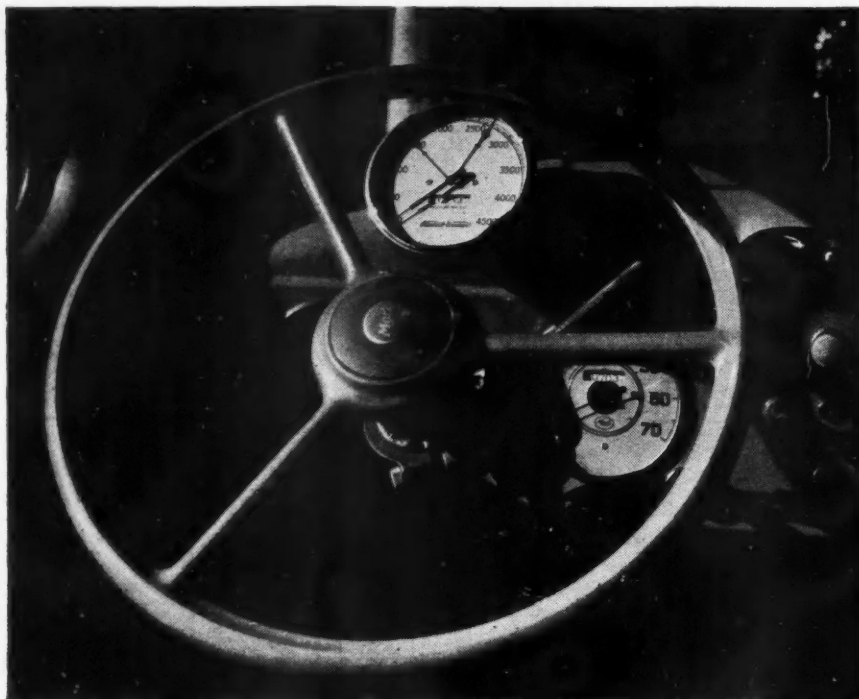
Fig. 1, above at left. Simple, sturdy, one-piece diamond plate tailgate, reinforced with structure channel
Fig. 2. Recessed license plate box, designed to protect both the license plate and rear light from damage
Fig. 3. Full width recessed step, an optional feature
The tread portion extends out over the rear bumper, which is made of channel iron. License plate holder and rear light to be inserted center or left, where convenient

All Material Copyrighted by E. M. Westberg

★ CCJ CUSTOM BODY SERIES



Even the conventional pick-up can be given a distinctive appearance.
This all-steel design is adaptable to a wide range of sizes, vocations.



Left. The tachometer is mounted directly above the steering wheel, where the driver can conveniently check road speeds, winch rpm and gear change

by A. R. PEARSON

A. R. Pearson Truck Co.,
Los Angeles, Cal.



Engine mile recording tachometers are indispensable in our fleet, forming the complete basis for our maintenance system. Actual records over a ten year period show

that since the use of tachometers, we have saved annually from 8 to 10 per cent of our gasoline consumption and 20 to 25 per cent of our oil consumption. The tachometer is responsible for these savings, for through its use the driver can maintain constant engine speed, which results in more efficient operation.

Many miles are added to our tires, and overspeeding, a chief contributor to the general deterioration of a vehicle, and to excessive use of gasoline, oil and tires, is closely controlled by tachometer readings.

Our approach to preventive maintenance, featuring tachometer readings, is designed primarily for a heavy machinery moving fleet. We operate as city draymen in the Los Angeles metropolitan area, with a fleet of 14 low bed trucks, 10 truck tractors, and 10 low bed trailers. Our various sized vehicles give the fleet a payload range of from 2 to 20 tons, so that movement of many types of heavy machinery and commodities is possible and profitable.

Service and maintenance periods are based on the number of engine miles a particular truck or truck tractor covers. There are several reasons for the use of the engine mile recorder. In our type operation, a piece of equipment will be winching all day but will have turned its wheels only enough to get to the job and back. Records show that our engine miles are double those of our wheel miles. In the course of a year, each vehicle averages 10,000 wheel miles (TURN TO PAGE 148, PLEASE)

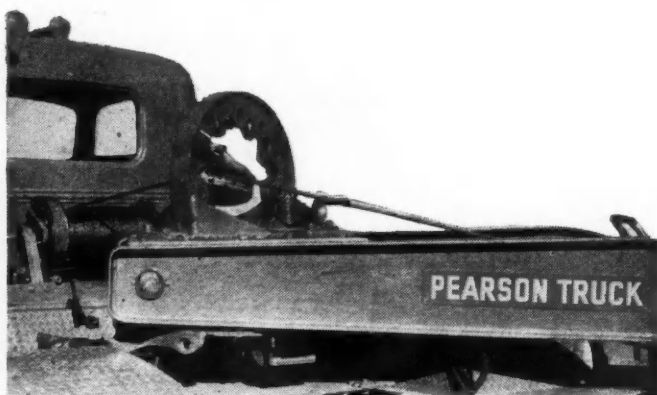
TACHOMETERS

Guide Fleets' Maintenance

Maintenance periods are based on readings.

Cuts gas and oil consumption, saves tires,

guides road speeds, gear selection, winch rpm



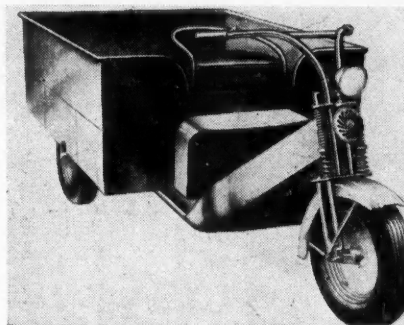
Winch line guide, designed by this fleet, automatically keeps the pull line centered with the trailer when loading. Eliminates the necessity of snatch block changes

Three-Wheeled, Half-Ton Truck Has Hydraulic Drive, 8½ Hp Engine

This new three-wheeled, half-ton truck developed by Firebaugh Motors, Inc., San Diego, Cal., is equipped with an 8½ hp engine of valve-in-head, air-cooled design. The two-cylinder, opposed, power plant features twin carburetion, improved cooling facilities and an electric starter. With a top speed of 35 miles per hour and over, the new truck is said to make 55 miles per gallon of gasoline.

Power is transmitted through two hydraulic drives operating sprockets and chains to the rear wheels in a seven to one drive ratio. No transmission or differential is necessary with this construction, and power transmission is said to be sure and smooth.

The frame is of tubular steel construction, suspended at the rear with a leaf spring and at the front through full float-



ing coil springs. The vehicle is equipped with self-equalizing Bendix brakes at the rear wheels. Tire size is 4 x 12 in.

The body is of welded steel construction, with a capacity of 23 cu. ft. Overall length of the vehicle is 103 in. Height, 36 in. With a wheelbase of 72 in., the truck weight empty is approximately 700 lb.



PREPARED TO TAKE PUNISHMENT

To stand the punishment of high-speed, heavy-duty, rough-road trucking, your springs will have to be *mighty* tough. That's why perfected Maremont springs so consistently fill your most exacting bill.

Many, many years of research and experimentation stand behind the spring that bears the Maremont name. The design . . . the select alloy steel . . . the fool-proof heat-treating . . . the rigorous pre-testing . . . *these are but a FEW* of the features which make the Maremont spring so resilient . . . so durable . . . and so perfectly prepared to take the punishment of fast, modern truck operation!

See Your Nearest Maremont Jobber or Spring Service Station for Springs, Helper Springs, Axle U-Bolts, etc.

Ask for Latest Spring Catalog 9720T.

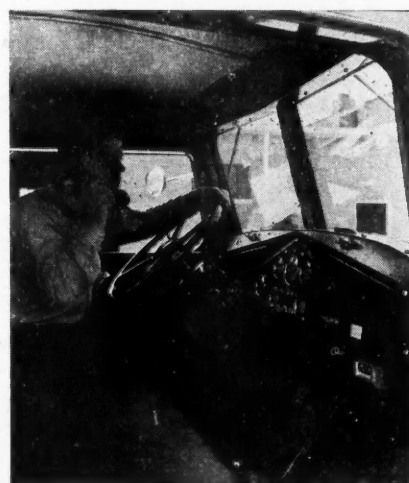
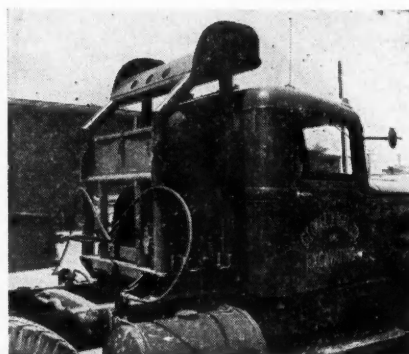
ALSO MANUFACTURERS OF MAREMONT MUFFLERS AND PIPES

MAREMONT SPRINGS

SINCE
1877

MAREMONT AUTOMOTIVE PRODUCTS, Inc.
1600 S. Ashland Ave. Chicago 5, Ill.
Branches at Chicago, Gary and Harvey, Ill.

Mobile Telephone



Mobile Telephone has found an unusual use in the hands of George J. Igel & Co., Inc., Columbus, Ohio. The firm has installed the equipment, supplied by Ohio Bell Telephone Co., in a big C-50-T Autocar tractor used to pull its 15-ton low-bed trailers. Top view shows radio equipment installed in box half-way up the "headache" bar.

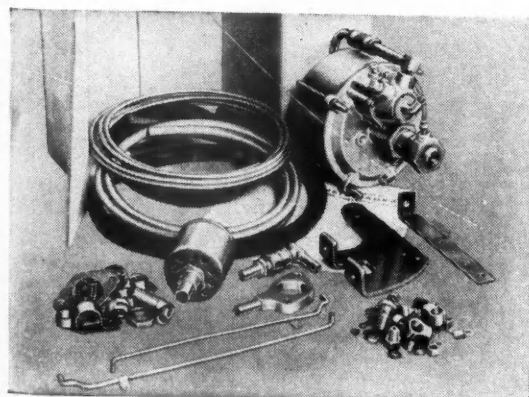
Above, driver uses headset in cab

IT PAYS TO STANDARDIZE ON

BENDIX
VACUUM POWER
BRAKE EQUIPMENT
B-K . . . HYDROVAC

A Condensed Catalog of
Units and Accessories

Bendix
 FOR EVERY
 POWER BRAKING
 NEED!



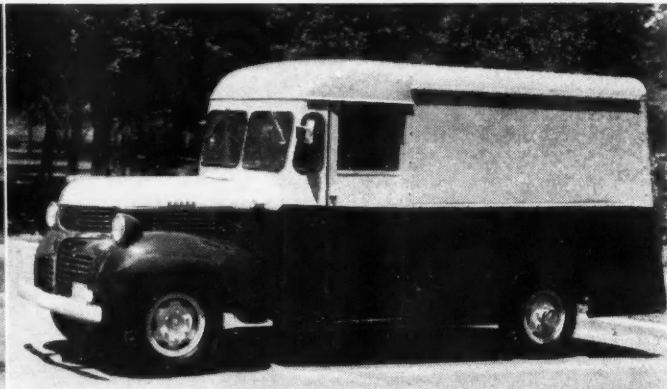
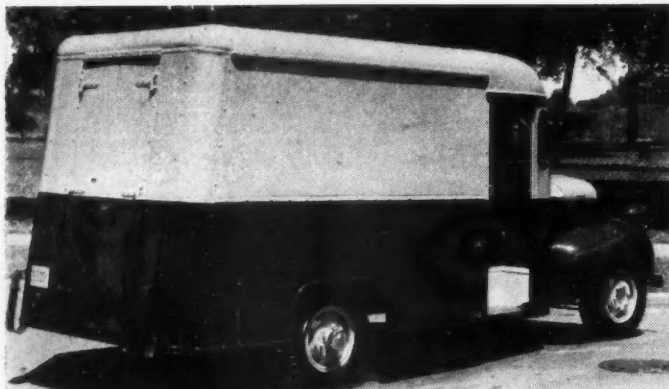
Hydrovac Installation Kit contains all the fittings and parts for complete installation. Any mechanic can do the job quickly and correctly.

When it comes to power braking, there's only one name you need to remember—BENDIX. For whether your problem involves heavy equipment or light—tractor or trailer—Bendix power braking equipment will do the job more efficiently and economically. The various sizes of Hydrovac*—world's widest-used power braking unit—and the many types of B-K equipment come to you in complete kits for simple and speedy installation. Complete instructions make the job easier, too. If your rolling equipment needs better stopping power, or if conversion is required—it will pay you well to standardize on Bendix—the first name in power braking.

*REG. U. S. PAT. OFF.

BENDIX PRODUCTS DIVISION of
 SOUTH BEND 20, INDIANA





Two views of new Lindsay Structure body with cab integral. Now available in four widths and three lengths

Lindsay Bodies with Cab Integral Feature Flexibility of Design

Lindsay Structure bodies with cab integral, which can be supplied for any make of truck chassis, are now available from members of the Nationwide LS Truck Body Organization, according to an announcement from Lindsay Corp., Chicago.

The single-unit models have been added to the Lindsay line in order to meet the demand for a retail delivery body that combines flexibility of design with ease of repair.

Die-formed shapes for the front ends are mass-produced in four widths from 68 $\frac{3}{4}$ to 86 $\frac{3}{4}$ in. The body, which is of standard Lindsay Structure, is at present available in three lengths: 104 $\frac{3}{4}$, 128 $\frac{3}{4}$ and 140 $\frac{3}{4}$ in., and can be furnished with either a straight or slant-back style of rear end. As the demand warrants, additional lengths of bodies will be added to the single-unit line.

The single-unit Lindsay Structure bodies

have the same ease of repair features as conventional Lindsay van-type units. In case of accident, only the damaged sections need be replaced and repairs can be quickly made from the outside.

Although a number of Lindsay Structure bodies have been built with cabs integral, this is the first time that this type of Lindsay body has been available nationally, built from mass-produced parts throughout.

Pierce Road Speed Governor Controls Only Miles-per-Hour

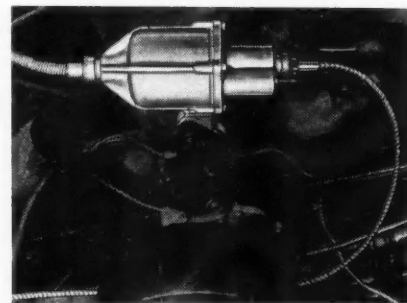


The Pierce Governor Co., Inc., 1600 Ohio Ave., Anderson, Ind., has just announced a revised version of its road speed governor. Principal feature of the device is the fact that it operates from the speedometer drive gear back of the transmission and controls *only* road speed. According to the makers, there is absolutely no restriction of engine power or speed regardless of the gear used until the vehicle reaches a predetermined number of miles-per-hour. Hill climbing and pick up are in no way impaired.

Mechanically, the governor is of the fly-ball type, operating on the principle of centrifugal force. The hardened weights

are mounted on a microfinished steel drive shaft and all moving parts roll on ball or needle bearings. The weights are balanced against a compression spring which is adjustable to the speed limitation desired. The entire unit is sealed and needs no lubrication except at normal service periods, many thousands of miles apart.

Installation is exceptionally easy, and in three steps. First the speedometer cable is removed from the speedometer gear drive in the transmission and the governor drive installed at the same place. Next the carburetor is removed, the valve box of the governor placed on the intake manifold and the carburetor mounted on top of the



valve-box using longer mounting studs provided. Finally the drive cable is connected at one end of the governor and the speedometer cable at the other, the latter driving through the governor.

Oldest Chevrolet

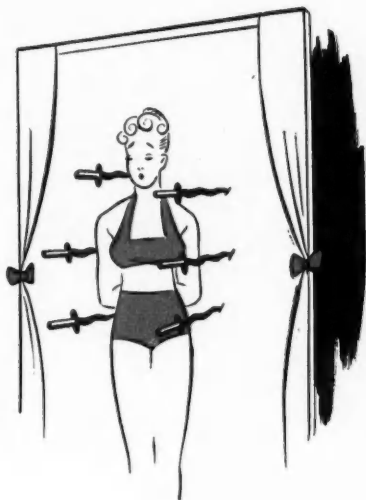


Chevrolet's search for its oldest model still in service turned up a 1918 winner in the hands of rancher Leslie A. Storey of Jordon, Mont. Here Storey "brands" his new truck presented to him by J. W. Burke, Chevrolet's truck dept. manager (left) while Mrs. Storey and cowgirl Merle Spears look on

For minimum wear, also...



NOT 2...



NOT 6...

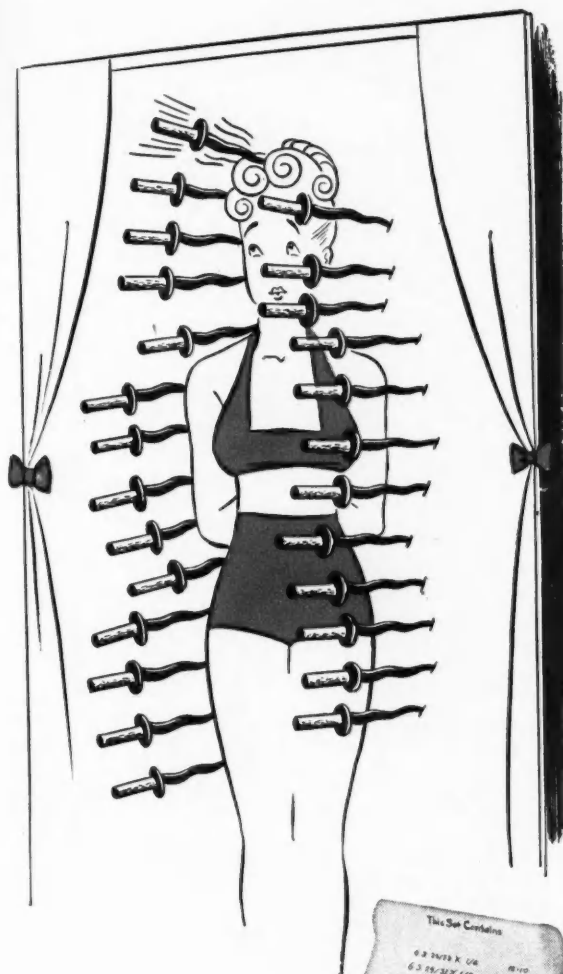
but **26**

basic designs

OF SEALED POWER PISTON RINGS

Minimum wear on cylinder walls is a "must" for BALANCED PERFORMANCE by piston rings. So are oil control, blow-by control, and low friction. You're sure of ALL FOUR when you use Sealed Power Individually Engineered Ring Sets, made up from twenty-six (26) basic designs of piston rings. Whatever the make, model, or cylinder wear condition, there is a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for seven years, has been producing rings for car, truck, and engine builders 35 years. For best results, re-power with Sealed Power motor parts. Sold by leading distributors. Sealed Power Corporation, Muskegon, Michigan and Stratford, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts



INDIVIDUALLY
ENGINEERED



SEALED POWER PISTON RINGS

BEST IN NEW TRUCKS! ★ BEST IN OLD TRUCKS!

KEEP YOUR WAR BONDS!
GET \$4 FOR \$3



LAUGH IT OFF

Bride: "Darling, I have a confession to make, I can't cook."

Groom: "Don't worry, dear. I'm a truck driver and most of the time there won't be anything in the house to cook."

CCJ

Two buzzards were lazily soaring over the desert when a jet-propelled plane zipped by them, its exhausts throwing flame and smoke. As it whizzed out of sight, one of the buzzards remarked: "That bird was really in a hurry." You'd be in a hurry too," said the other, "if your tail was on fire."

CCJ

Catty Cora, our office gossip, just got back from her vacation at the beach. "You should have seen some of the beautiful baiting suits the girls were wearing," quipped Cora.

CCJ

The safety director's young son Johnny was inclined to be rather frivolous and irresponsible, and his father decided to have a serious talk with him.

"Johnny," he said, "you're a big boy now, and it's time you took things seriously. Just supposing I were to die suddenly, where would you be?"

"I'd be here," replied Johnny. "The question is, where would you be?"

CCJ

Customer with hangover: "Give me something for the shakes."

Bartender: "What do you want?"

Sufferer: "Something tall, cold, and full of gin."

Nearby Drunk: "Sir, you are speaking of the woman I love!"

CCJ

A woman complained to her neighbor, who every evening about midnight walked his dog by her house, that the pooch always paused by her new shrubs.

She got this answer: "Now don't fret, Ma'am, I always start around the block the long way, and by the time he reaches your bushes, it's only a gesture."

CCJ

FREIGHT HANDLER: "I'd like to work here, but I can't find a place to park my car."

WAREHOUSE FOREMAN: "I GUESS YOU WON'T DO. WE WANT ONLY FREIGHT HANDLERS WITH CHAUFFEURS."

CCJ

1st Mechanic: "I hear you advertised for a wife. Any replies?"

2nd Mechanic: "Sure. Hundreds."

1st M.: "Good. What did they say?"

2nd M.: "They all said: 'You can have mine.'"

The company Chaplain approached one of the young fellows in the Claim Department. "Son," he queried, "are you following the Ten Commandments?"

O.S.&D. Clerk: "I don't know, sir. It's just about all I can do to keep up with these branch memoranda concerning over, short and damaged freight."

CCJ

Mary: "How did you happen to quit teaching arithmetic to join the chorus?"

Lou: "Well, I think there's more money in showing figures to the older boys."

CCJ

"CHARLIE DEAR," SAID THE BRIDE, "LET'S TRY TO MAKE PEOPLE THINK WE HAVE BEEN MARRIED A LONG TIME."

"ALL RIGHT, HONEY," CAME THE REPLY.

"BUT DO YOU THINK YOU CAN CARRY BOTH SUITCASES?"

CCJ

Mose: "Come here quick, Liza, the baby's got something in his diaphragm."

Liza: "Laws sakes! If'n dat don't beat all—and I jess done put it on 'im."

CCJ

MARTY, OUR MAINTENANCE SMARTY, SAYS: "IF YOU WANT TO LIVE TO SEE EIGHTY, DON'T KEEP LOOKING FOR IT ON THE SPEEDOMETER."

CCJ

Suburban Resident: "It's simply fine to wake up in the morning and hear the leaves whispering outside your window."

City Man: "It's all right to hear the leaves whisper, but I never could stand hearing the grass mown!"



"I guess I'm slipping, George. This fight is about the merits of a tractor-semi and a six wheel truck"

"MOST ACCIDENTS HAPPEN IN THE KITCHEN," SAID THE TRAFFIC MANAGER, READING FROM THE NEWSPAPER. "AND WE MEN," HE ADDED GRIMLY, "HAVE TO EAT THEM."

CCJ

A school teacher told her pupils to listen to their parents' conversation and if they heard any new words to look up the meaning in the dictionary and write a sentence using the word properly. The next day she asked little Tommy what word he had heard. He replied that he had heard the word 'pregnant' and the definition given in the dictionary was "to carry a child." The teacher said, "Have you written a sentence using it?"

"Yes, ma'am," replied Tommy. "The fireman climbed a ladder into the burning building and came down pregnant."

CCJ

HOSTESS TO LITTLE BOY AT PARTY: "AREN'T YOU GOING TO EAT YOUR JEL-LO?"

"No, MA'AM," SAID THE LITTLE FELLOW, "IT AIN'T DEAD YET."

CCJ

Shop Foreman (interrupting a poker game in the wash room during the lunch hour): "Didn't you men see the sign prohibiting gambling?"

Mechanic: "Oh, but we're not gambling."

Shop Foreman: "Then what the hell's that money doing on the table?"

Mechanic: "We're using that to keep score with."

CCJ

Mike Clancy had been driving a semi-trailer rig for fifteen years—come rain, come snow, come shine. He was known as the most reckless man on the driver staff, but because of his jovial Irish wit he was retained. One day, his chance-taking resulted in his death. This brought about a very fine wake, at which the highest praise was given the deceased.

During the proceedings, a friend of the widow asked: "Did Mike leave you well fixed?"

"Shure, an' he did that. 'Tis \$50,000 he's after leavin' me."

The friend rolled her eyes heavenward. "Tsk tsk tsk," she tsked. "Think of that. And him that couldn't read nor write so fancy."

"Yes," agreed the widow, shaking her head sadly, "nor drive a truck."

(Resume Work)



Over 8 times as many new Studebaker trucks now help speed the nation's postwar progress

EVERYWHERE you go, you see more and more new Studebaker trucks wheeling past. They share the limelight with Studebaker's new passenger cars as postwar sensations.

All America is better off, thanks to the extra loads that these Studebaker trucks transport.

Half-ton, one-ton and larger capacity trucks have been streaming off the Studebaker assembly lines in record-breaking quantities.

Over 8 times as many have gone into service so far this year as in 1941 for the same period!

Real help when help was needed

Business and agriculture needed new trucks this year as never before. A serious shortage seemed likely. Studebaker's greatly increased production has been welcome and timely.

What's equally important, these new Studebakers are thoroughly modern trucks. They come completely equipped with such advancements as automatic choke, automatic spark control, adjustable octane selector, oil bath air cleaner and oil filter.

But remember please, that even Studebaker's huge output of new trucks isn't yet big enough to meet the demand.

If you can get along with your present equipment, try to do so. Your Studebaker dealer, in fact, will gladly help you do so—with the finest kind of maintenance service.

STUDEBAKER

BUILDER OF TRUCKS YOU CAN TRUST

The Studebaker Corp'n, South Bend 27, Indiana U.S.A.



There's real pulling power in Studebaker's Hy-Mileage and Econ-o-miser truck engines!

And every Studebaker truck cab has adjustable window wings, two arm rests and adjustable seat, dual sun visors, dual windshield wipers, dome light, door locks, tight-gripping rotary door latches—all at no extra cost!

CCJ QUIZ

by ROBERT F. BAHL



Around the world we go, and we come back with ten more CCJ Quiz Questions. Each correct answer is worth 10 points. See if you can score 100. If you score 70 give yourself a pat on the noggin. Answers are on page 156.

1.

Did you think that the United States led the world in trucks for its population? You're wrong! Here's a country that has more trucks per capita than we do.

- a. Union of South Africa c. Sweden
- b. Australia d. Palestine

2.

There are roughly 5½ million trucks in this country. Is that any help to you in determining the total number of trucks all over the world?

- a. About 6 million c. About 10 million
- b. About 8 million d. About 12 million

3.

Everybody knows that there are more trucks in the U. S. than anywhere else,

but which country is second?

- a. Canada c. Germany
- b. Great Britain d. Russia

4.

Of the trucks manufactured in this country last year, how many went into the foreign market?

- a. 1 out of 5 c. 1 out of 20
- b. 1 out of 8 d. 1 out of 100

5.

Do our neighbors in Canada export more vehicles than they import, or is it the other way around?

- a. exports exceed imports.
- b. Imports exceed exports.
- c. Exports and imports just about balance.

6.

Come, Senor, tell us which Latin American country boasts of having the most trucks?

- a. Mexico c. Brazil
- b. Argentina d. Cuba

7.

Now, let's skip across to Aisa and find out which country there has the most trucks?

- a. China c. India
- b. Japan d. Philippine Is.

8.

In the number of truck registrations, New York City is exceeded by only

- a. One foreign country.
- b. Five foreign countries.
- c. Ten foreign countries.
- d. Twenty foreign countries.

9.

Is it true that there are more motor vehicles in California than in all of Great Britain?

- a. Yes b. No

10.

Six trucks for every passenger car is the ratio you'll find in

- a. France c. Spain
- b. Italy d. Russia

JOBSERVATIONS

By Buster Rothman

The fellow who goes through life looking for something soft can generally find it under his hat.

★

The well-digger is probably the only man who can succeed in life's work beginning at the top.

★

It is with men as with horses: those that do the most prancing make the least progress.

★

Those who try to do something and fail are infinitely greater than those who try to do nothing and succeed.

★

The secret of life is not to do what you like, but to like what you do.

★

The cry today is for betterment of economic conditions, but how few of us realize that a high standard of living begins above the collar, and not below the belt.

★

If you grow all day, it's only natural to feel dogtired at night.

★

A hen does no boasting until she has finished her work.

The big guns of business are usually those that never were fired.

★

About the only person in the world who may wake up and find himself famous—is the professional prize-fighter.

★



"I said yes we do need an aggressive young fleet supervisor. But how come you left your last job?"

SIGNS OF SAFETY

by Buster Rothman

A sign in a western town reads:
"4076 people died last year of gas in this state—29 inhaled it; 27 put a lighted match to it; and 4000 stepped on it."

★ ★ ★

Traffic sign in New Rochelle:
GO SLOW
This is a one-hearse town.

★ ★ ★

Warning at New Jersey intersection:
CROSS ROAD
... Better Humor It

★ ★ ★

Mountainview warning:
Hardly a soul is still alive,
Who passed on this hill at 75.

★ ★ ★

Connecticut road sign:
Drive like hell and you'll get THERE!

★ ★ ★

Metuchen, N. J., safety sign reads:
Drive slow and fare well:
Go fast and farewell!

★ ★ ★

Louisville Traffic Sign:
Slow down before you become a statistic!



THE NEW EXIDE BATTERIES

The high capacity batteries with the low cost per mile of operation

In design, construction, performance and economy of operation, the new Exides are today's outstanding motor truck batteries. They are a product of Exide engineering development and Exide manufacturing skill... to which has been added a vast experience on automotive equipment of every type, serving in all climates and under the severest hardships a battery has ever had to endure.

When your motor trucks are equipped with Exide Batteries you can be certain of

dependable performance, long life, economy, and ease of maintenance.

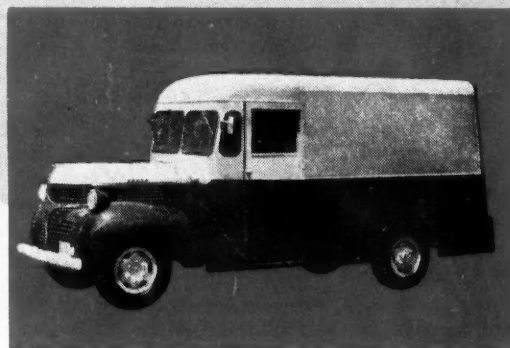
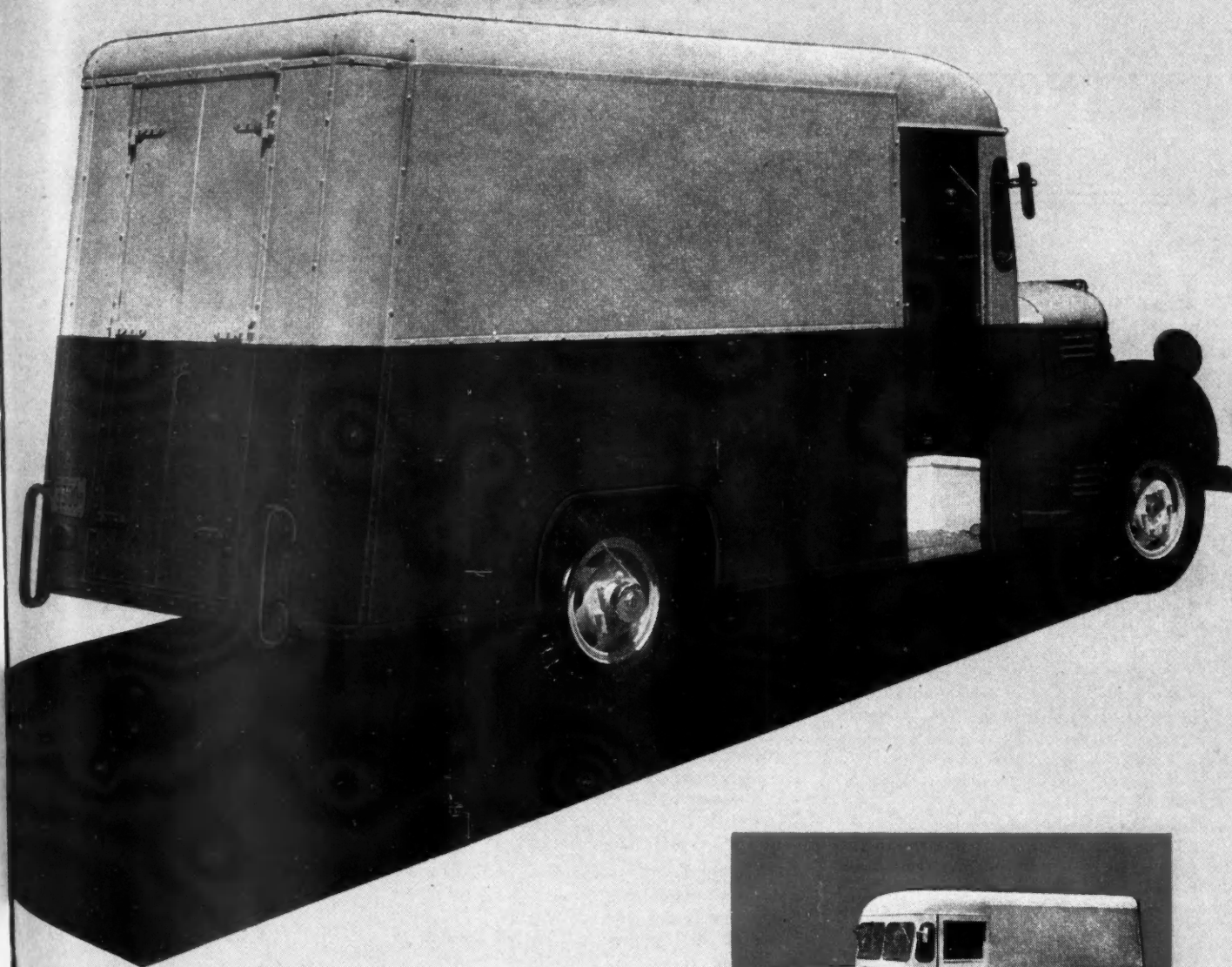
IMPORTANT NEW FEATURES

- Heavy, oversize plates.
- Greater capacity.
- Self-cleaning, non-spitting vent plugs.
- Double insulation between plates.
- "Bull's Eye" electrolyte leveling device.
- Larger, heavier inter-cell connectors.
- Hard rubber container.
- Positive cover seals.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

New Truck Registrations by Makes and States*

STATE		Auto-car	Brock-way	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Mack	Osh-kosh	Reo	Sterling	Studebaker	Ward La France	White	Willys	All Others	Total
Alabama	June			123	6	2	193	6	329		115	139	5		20		29		12	74	4	1,057
	6 Mos.	3		2372	48	12	1206	43	2126	1	691	1100	37		158		257	1	93	512	41	8,609
Arizona	June			93	1		52	4	120	1	33	33	2		13		32		8	27	4	423
	6 Mos.	4		494	9	2	255	14	516	2	155	161	3		60	2	123		28	123	23	1,980
Arkansas	June			39	2		45		102		33	40			5		6		1	21		234
	6 Mos.			2419	47		945	17	2154		461	789	11		53		295		41	416	13	7,661
California	June	28	1	668	40	20	698	16	1093	7	362	553	29		46	11	320		39	154	88	4,173
	6 Mos.	204	27	6757	230	162	3996	75	6178	94	2377	3263	140		319	57	1766	1	253	918	465	27,282
Colorado	June	4		56	7		117	2	211	6	58	109	7		12		34		10	87	6	734
	6 Mos.	14		916	61	27	599	21	1253	52	301	643	28		64		208		39	275	29	4,530
Connecticut	June	10	12	51	12	18	99	18	134	5	60	161	41		15	1	55		17	30	9	748
	6 Mos.	114	80	881	67	48	580	78	693	12	275	658	155		75	4	221		97	162	50	4,250
Delaware	June		3	15	1		37		66	2	15	26			2		4		2	10	2	193
	6 Mos.	12	16	310	9	12	274	1	368	3	100	195	11		12		54	1	17	42	9	1,446
Dist. of Columbia	June		2	31	5	7	31	2	79		33	24			9		15		2	5	6	232
	6 Mos.	3	13	342	30	68	264	7	400		154	195	20		28		61		26	10	13	1,634
Florida	June		6	569	19	11	311	8	572	10	137	237	34		28		110		21	133	21	2,227
	6 Mos.	28		2824	81	19	1122	43	2347	31	492	934	113		125		395		101	404	56	9,105
Georgia	June			149	14		196	7	433		89	172	16		13		49		16	76	4	1,234
	6 Mos.	6	2	2604	88	8	1424	34	3087	1	586	1091	87		155	1	370		145	429	31	10,150
Idaho	June	2		110	12	8	111	8	206	3	48	124			11		52		3	59	6	763
	6 Mos.	2		789	32	12	350	18	656	4	191	425	4		40	1	179		8	188	32	2,931
Illinois	June	22	4	569	86	37	451	16	889		233	631	32		74		155	1	48	380	49	3,657
	6 Mos.	172	45	6614	597	206	3700	127	5832	7	1565	3564	179		495	8	1155	3	356	834	251	25,771
Indiana	June		3	300	26	8	319	4	486	1	154	280	5		31		135		10	154	28	1,944
	6 Mos.	24	81	2545	203	86	1885	71	2774	9	870	1881	81		257		898		177	603	131	12,576
Iowa	June			149	16	6	207	4	388	4	75	239	18		22		79	1	6	143	6	1,343
	6 Mos.	3	2	2269	133	27	1359	29	2424	10	457	1443	77		169		528	2	73	675	40	9,720
Kansas	June			155	37	1	215	21	462		125	183	1		30		93		8	50	6	1,388
	6 Mos.	7	1	2478	130	20	989	74	2443	1	489	1194	13		130		585		79	213	38	8,884
Kentucky	June			175	12	4	188	10	280		59	157	7		18		50		11	336	15	1,323
	6 Mos.	12		1901	67	17	1126	47	1830		481	1094	41		127		322		72	715	51	7,903
Louisiana	June			110	10	1	130	6	308		64	134	5		11		43		15	88	1	927
	6 Mos.	10		1673	60	3	925	24	1602		316	746	45		73		341		82	315	14	6,259
Maine	June		4	28		1	70	3	106		24	41	7		9	1	14		3	3	2	317
	6 Mos.	19	17	900	13	11	579	32	1111	7	256	515	56	7	63	7	162	1	52	172	35	4,015
Maryland	June		8	95	15	12	188	14	252		61	123	18		19		51	5	11	57	6	933
	6 Mos.	37	58	1554	44	66	1012	61	1434		407	825	102		145		264	19	96	219	37	6,380
Massachusetts	June	34	37	266	21	11	228	11	363		131	222	51	1	33	12	71	3	64	83	8	1,670
	6 Mos.	71	77	1016	68	82	717	27	1172	1	325	572	138	1	93	28	171	4	125	227	25	4,940
Michigan	June	7	5	416	16	22	464	33	624		175	261	10		80		127	1	28	117	27	2,413
	6 Mos.	59	21	3807	174	173	3128	267	4433	1	1050	1608	64		431	1	742	14	198	747	180	17,118
Minnesota	June	9		143	14	8	243	5	435	1	103	216	19		15		89		28	75	9	1,412
	6 Mos.	30	2	2117	110	43	1370	63	2303	21	482	1332	71	4	83		418	10	153	281	48	8,975
Mississippi	June			97	9		133		304	1	84	122	2		13		33		5	45	2	853
	6 Mos.	2		2288	46	2	979	21	2013	1	437	733	18		69		294		54	275	14	7,436
Missouri	June	1	1	344	20	22	343	12	640		176	319	3		21		90	2	31	182	8	2,224
	6 Mos.	17	6	3999	140	72	1916	67	3433	3	838	1795	53		153		534	3	143	603	29	13,900
Montana	June			78	10		94	2	129		48	75	1		5	1	44		7	103	8	608
	6 Mos.			986	41	3	552	9	850	2	216	486	2		36	1	235		25	453	23	3,931
Nebraska	June			50	23	5	112	5	233	10	53	135	10	3	8		51		15	89	4	808
	6 Mos.	4		1197	118	6	777	30	1425	22	320	902	64	3	81		327		119	429	19	5,843
Nevada	June			23	8		27		15		8	15			2		14		5	1		119
	6 Mos.	5		142	11	2	106	1	138	4	49	98			12	1	47		2	38	10	665
New Hampshire	June			24		2	36	1	73		19	31	9		2	1	8		2	30	3	243
	6 Mos.	20	6	430	21	10	347	13	472		121	241	69		60	14	105		41	133	18	2,121
New Jersey	June	17	30	175	18	33	223	17	362	2	163	219	55		24		57	4	32	59	17	1,507
	6 Mos.	201	255	2289	133	145	1411	89	2141	11	778	1281	323		120	3	431	30	220	318	100	10,283
New Mexico	June			55	7		50	5	79		33	45	4		5		11		5	30	3	332
	6 Mos.			735	38		331	14	470	5	183	250	21		21		118	1	24	114	10	2,335
New York	June	43	86	532	69	41	683	47	847	12	329	484	159	2	84	3	164	11	78	211	53	3,938
	6 Mos.	539	816	5720	521	227	4755	289	5661	73	1939	3534	1030	40	563	47	1111	119	731	1038	342	29,131
North Carolina	June			213	4	3	228	12	384		80	132	14		31		83		12	129	15	1,341
	6 Mos.	25	9	3443	67	20	1658	83	2834	9	421	1046	140		270		559	1	169	685	60	11,519
North Dakota	June			8			8		20		2	9			1		1		1	23	4	73
	6 Mos.	2		363	11		203		368	3	64	233	8	1	17		93		6	119	10	1,494
Ohio	June	49	9	444	32	34	620	47	829		230	445	60		75	1	153	1	96	153	35	3,283
	6 Mos.	178	45	4535	231	217	3740	213	5138	17	1534	3012	338	1	432	1	984	11	612	1154	239	22,631
Oklahoma	June			212	15	2	337	4	420		91	294			16		83		30	112	7	1,623
	6 Mos.	2		2183	41	18	1452	25	2204	5	474	1305	41		107		394	1	102	360	30	8,744
Oregon	June			129	25	4	185	10	219	2	72	136	7		11		77		15	85	19	1,002
	6 Mos.	19		1533	147	24	993	63	1235	6	471	737	39		76	8	430		93	435	72	6,371
Pennsylvania	June	61	62	447	56	12	674	21	972		344	651	76		63	14	214	10	93	223	42	4,015
	6 Mos.	353	435	5081	351	94	4365	209	5453	28	1711	3722	501	32	517	57	1235	47	623	977	181	25,977
Rhode Island	June			30	5	4	41	3	56		11	23	3		8	1	15		8	11	4	233
	6 Mos.	55	4	430	21	43	231	8	371	2	125	160	32		19	5	74	2	31	51	15	1,694
South Carolina	June			128	5																	



The Single Unit Truck Body

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STRUCTURE

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U.S. and Foreign Patents and Patents Pending

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WASHINGTON

RUNAROUND



Road Tests Postponed
New ICC Draft Progressing
Garage Ventilation Data

Road Tests Postponed

After stumbling along in bureaucratic fashion for almost a year without any concrete results, the Test Committee of the Committee on the Economics of Motor Vehicle Sizes and Weights of the Highway Research Board has decided to postpone the road tests scheduled for August until next spring.

Primary reason for the postponement was the reported delay in obtaining trucks and tractors, primarily the latter, suitable for test purposes. There was also some difficulty in determining the type of vehicles and various combinations to be used.

Present thinking calls for tests on trucks ranging from one with an 18,000 lb. rear axle loading to a tractor and semi-trailer or full trailer with 7 or 8 axles.

It is planned to hold the tests on the Pennsylvania Turnpike and another route paralleling the super-highway. About 120 test runs will be made. As presently planned three round trips will be made with each type vehicle on each route.

New ICC Draft Progressing

Work is progressing rather slowly on the second draft of the ICC revisions of the Motor Carrier Safety regs. This second draft, to be used as a basis for public hearings, will incorporate many of the suggestions made at the informal conferences by motor carriers, labor unions, state officials, and others.

Conferences on Part 7, covering explosives and other dangerous articles, will begin sometime this month and should be concluded during November. Part 7 will then be incorporated with Parts 1 to 6. The completed draft will probably be ready sometime in February, 1948, with public hearings scheduled for early spring.

While considerable objection has been raised to certain sections of the original ICC draft by ATA and other groups, much of this was unnecessary since it was obvious that many of the new provision were advanced by the Commission as mere trial balloons.

The ICC has also postponed the effective date of its order covering saddle mounts used in driveaway operations until October 15, 1947. At the same time, it postponed its order affecting the structural

by **GENE HARDY**
CCJ Washington Bureau

strength and capacity of tow-bars until December 1.

Revised Account System

A revision of the uniform system of accounts used by about 2300 Class I motor carriers will be put into effect on January 1, 1948, according to an announcement of the ICC Bureau of Motor Carriers. Interested carriers were given until September 22 to comment on the proposed changes.

Garage Ventilation Data

Of considerable importance to truckers who operate their own garages and warehouses is a recent study of the Bureau of Mines on methods for insuring adequate ventilation in such structures so as to climate carbon monoxide and other dangerous gases emanating from trucks and gasoline-powered engines.

The report is designed to aid truckers and others to work out safe ventilating systems and eliminate needless hazards to employees. Data are presented in the report that may be used in making estimates of ventilating requirements.

To know how much air to circulate throughout a plant or garage when operating gasoline-driven equipment, information must be obtained on the rate at which carbon monoxide is produced, the report states. Three factors are considered—the rate of fuel consumption, volume of the exhaust gas, and the concentration of carbon monoxide in that gas. A specific example is given in the report showing how the right amount of air for ventilating purposes is derived.

Based on studies made in garages, the report states that the best ventilation for one-story-building is attained by circulating fresh air at floor level with an exhaust near the ceiling or roof. In taller buildings, cross ventilation is recommended for each story.

Copies of the report, which include much technical data, may be obtained free by writing the Bureau of Mines, Department of the Interior, Washington 25, D. C., and requesting Information Circular 7404.

Atomic Shipments Now Routine
Trucking Reserve Units
Gas Economizers Blasted

Atomic Shipments Now Routine

Scotching many wild rumors about the dangers involved in the transportation of radioactive materials, the Atomic Energy Commission has revealed that shipments of radioisotopes from Oak Ridge, Tenn., to industrial and academic laboratories are now considered a relatively routine matter, provided a few simple precautions are taken. To date there have been no accidents in either shipping or handling these materials.

All shipments are now made by rail or air, but regulations applying to motor trucks are being prepared by the Interstate Commerce Commission. Erroneously, it had been thought that specially designed vehicles, using large amounts of heavy cadmium and lead shielding, would be required. An offer to build such a vehicle has been discouraged, since it was obviously unnecessary. In fact, ordinary standard vehicles are used to haul the radioisotope containers from Oak Ridge to rail centers and airports. The ICC regulations will confirm many of the procedures used by AEC.

Trucking Reserve Units

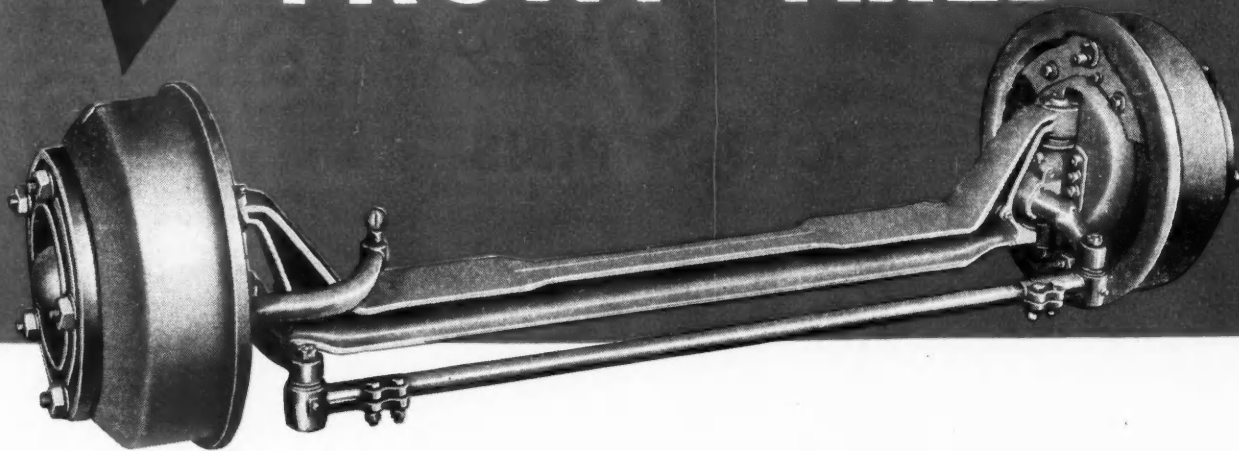
The first trucking concern to activate a reserve unit under the War Department's affiliation program is the Central Motor Freight Association, Inc., Chicago, Ill. This unit has been designated the 425th Highway Transport Division.

Encouraged by its success with such groups during World War II, the Army has underway a program to establish upwards of 2500 service units within industry as part of the nation's military reserve. Touching all industry, the program is designed to make possible the quickest recovery from the effects of any future attacks against the United States.

These service units will act as an organized reserve to back up combat troops as well as existing service troops in the regular Army. All personnel of the units will be outfitted by the Army and industrial sponsors may choose one of several training plans for their specific units. Personnel will have the same duties in the service units as they are required to carry in their civilian capacities.

In addition to highway transport units, other segments of the automotive industry
(TURN TO PAGE 88, PLEASE)

Another Item in the "SHULER AXLE" LINE- FRONT AXLES



Sinc 1915

One-Piece Tubular Trailer Axles
One-Piece Square Trailer Axles
One-Piece House Trailer Axles
Heavy-Duty Truck Front Axles
Heavy-Duty Machinery Front Axles
2" Square Front-Steer Trailing Axles
Heavy-Duty Machinery Trailer Axles
Heavy-Duty Brakes, Mechanical, Vacuum or Air
Miscellaneous Forgings for Heavy-Duty Trucks and Trailers

FOR more than thirty years, Shuler front axles have been tested and proved on all types of trucks, busses and heaviest "off the highway" equipment. Thanks to the knowledge gained in this varied experience, *we know that Shuler front axles are second to none in America*, and we would welcome an opportunity to prove it to you.

The newest model in our line is a fine, 7750-pound front axle especially designed for

"change-over" heavy-duty usage on Chevrolet, Ford and other light trucks and busses. Like the famous 10,000-pound and 14,000-pound Shuler front axles, it is of highest quality, is conservatively rated, and will give you superlative performance. Write for complete specifications and quotations.

SHULER AXLE CO., Incorporated, Louisville, Ky.

Detroit Office: 8424 Woodward Ave.

Export Division: 38 Pearl St., New York, N. Y.

West Coast Warehouse: 1280 Forty-Fifth St., Oakland, Cal.

Washington Runaround

(CONTINUED FROM PAGE 86)

will form maintenance and repair, supply, and utility groups.

Gas Economizers Blasted

Tests of gas economizers at the National Bureau of Standards have revealed that these devices, allegedly designed to reduce the fuel consumption of the average automotive engine, have no basic value, according to Bureau engineers.

The Bureau states that the postwar

"economizers" tested do not differ radically from prewar models, although their names tend to keep up with the latest in engineering and are often designated as electronic or supercharge devices.

Bureau engineers say that some of these devices "may actually effect a small amount of fuel saving by adding additional air to the gas-air mixture prepared in the carburetor adjustment. Most others tested showed no measurable effect whatsoever on either gas consumption or engine performance."

Of the devices that produce no measurable effect, says the Bureau, a recent example was an "electronic gas saver" which, by utilizing an electric spark, was

said to produce ozone that would boost power. Bureau engineers report that "the amount of ozone produced was so small that it could not be measured which has a negative virtue as ozone in quantity has been found to be a powerful knock inducer. The claim for another type of economizer, which fitted on the end of the exhaust pipe, was that, by reducing back pressure in the exhaust line, it would cause a more complete elimination of the burned fuel in the cylinder and increase the efficiency of succeeding charges from the carburetor. In testing this device in the laboratory, a pressure drop was built up at the end of the exhaust line that was more than 30 times that which would be met anywhere outside the laboratory before a change in gas use occurred."

In their engine tests, Bureau technicians found that the mixture that gives maximum engine power contains about 12 lb of air to 1 lb of fuel, while the most economical mixture is around 17 lb of air to 1 lb of fuel.

PRA Brake Tests Delayed

Statements claiming knowledge of a series of braking tests to be inaugurated by the Public Roads Administration within the next few months have been stamped by agency spokesmen as premature. PRA is discussing the possibility of renewing such tests, originally begun in 1941 and 1942, in order to determine the adequacy of present day motor vehicle brakes in relation to highway surfaces now being used. However, no announcement has been made, in fact, as this issue of CCJ goes to press, agency spokesmen had not yet decided when they would call in interested private groups to get the benefit of their advice.

Gas Tax May Be Eased

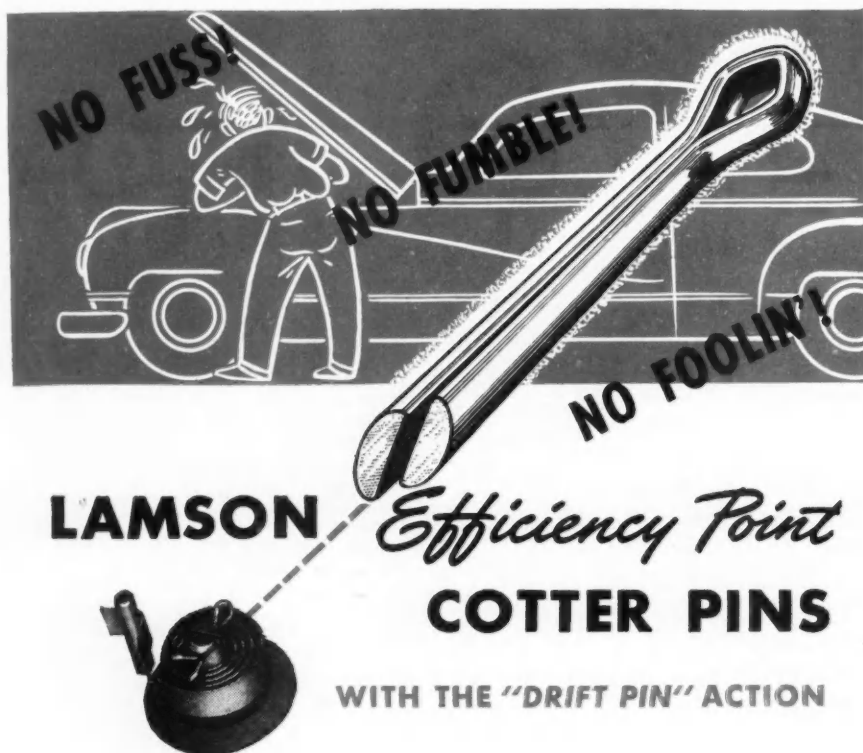
A recent Treasury Department study has suggested Federal withdrawal from motor fuel taxation in return for state withdrawal from another field of taxation, as yet unnamed. The supply points out that the Federal gasoline tax was an emergency depression measure, limited to one year (1932), a dozen years after the states had occupied this field of taxation. The study also reviews coordination proposals which generally favor withdrawal of the Federal government from this field. The question of Federal abandonment of other automotive excises is not discussed.

Truck-Plane Bill Okayed

Last minutes legislative developments included enactment into law of HR 2109 authorizing joint motor truck-plane service by combining individual rates of the respective carriers.

While many bills of interest to truckers failed to pass, most of these remain alive and will be brought up again next January when Congress reconvenes.

There include: the Reed-Bulwinkle joint rate-making bill; a bill requiring Federal licensing of drivers; a 1¼ per cent increase in PRA's administrative funds; and HR 2759 designed to set a two-year limit for claims for freight overcharges or undercharges.



Whether it's on the automotive production lines or in automotive repair shops time is important. That's why Lamson Efficiency Point Cotter Pins are "standard equipment" both places.

Lamson Cotters are designed with pointed shanks—one shank longer than the other. This gives them a "drift pin" action which aids in aligning parts and cuts down needless fumbling. All it takes is a blow of the wrench or twist of the pliers to spread the points.

Ask your jobber for Lamson "Efficiency Point" Cotters. They'll save you money in the long run.

THE LAMSON & SESSIONS CO., 1971 W. 85th Street, Cleveland 2, O.
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago



SELL

ADDED SAFETY ON YOUR VEHICLES...

Install
Wagner
Air Brakes

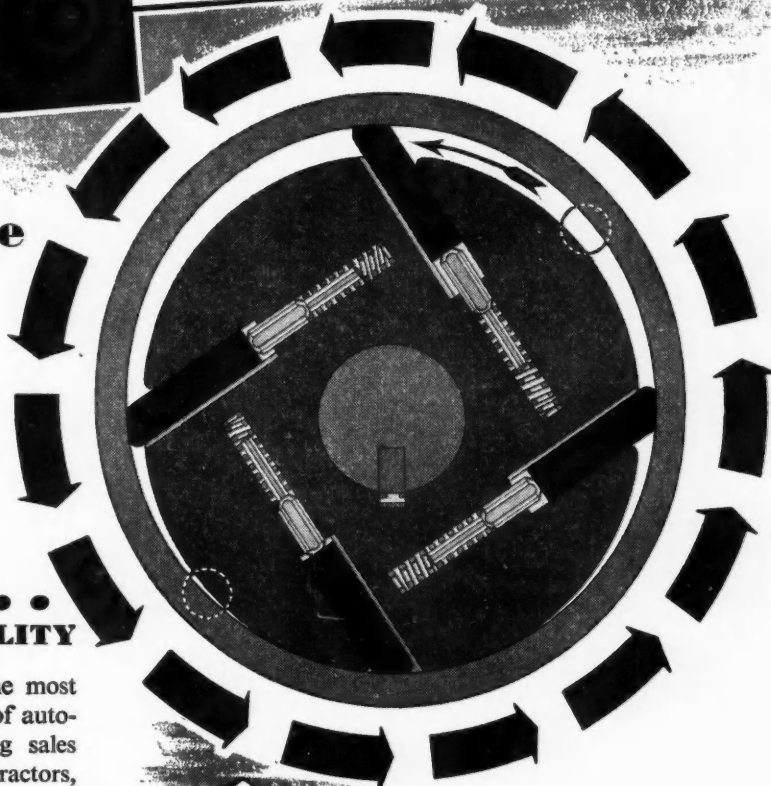
the **ONLY** Air Brake with the Rotary Compressor...

THEY ARE **FIRST...**
IN ECONOMY AND RELIABILITY

BRAKE safety and reliability is one of the most important considerations in the designing of automotive vehicles and presents an outstanding sales advantage. Successful operators of trucks, tractors, trailers, and buses are quick to realize this. Today, loads are heavier... runs are longer... speeds are higher... and competition is keener.

When the vehicles you manufacture are given the added safety provided by Wagner Air Brake Systems, you give the users confidence "every inch of the way." From every angle, Wagner Air Brake Systems are your best bet—They are easy to install... Maintenance is very low... They are economical to operate... and they are the product of a company with twenty years of experience in the manufacture of automotive brakes.

For complete description, write for Bulletin KU-50B and address your request to Wagner Electric Corporation, 6470 Plymouth Avenue, St. Louis 14, Mo.



Check These

POINTS OF EXCELLENCE OF THE ROTARY COMPRESSOR

- | | |
|--|---|
| Rotary motion of all moving parts. | Extremely quiet in operation. |
| In running balance at all times. | Self-contained oiling system—uncontaminated by engine waste products. |
| Longer belt life due to more uniform torque loading. | Compact—requires minimum installation space. |
| Low friction losses—therefore high operating efficiency. | Low operating temperature prevents carbon formation in the compressor and delivery lines. |
| A predetermined air pressure range automatically maintained. | Adaptable to all types of automotive brake systems. |
| Operating parts are lightly stressed, thereby insuring long life and low maintenance cost. | |

Get Complete Information Today!



LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • NoRoi
CoMax BRAKE LINING • AIR BRAKES • TACHOGRAPHS
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES



Dayton Rubber Promotes Shop Safety with Two-Color Poster Series

To Dayton Rubber Mfg. Co. goes credit for a series of eye-catching safety posters being mailed, without charge, at monthly intervals to fleet operators. The series is in two colors, individual posters measuring approximately 9 x 11½ in.

Each poster deals with a separate phase of shop safety concerning subjects that COMMERCIAL CAR JOURNAL had a hand in selecting. A few are reproduced on this page. Others in the series humorously de-

pict the troubles of shop personnel who "Smoked around gasoline," "Inflated a tire without a proper guard" and slipped on a greasy floor.

Although the reverse side of the posters carries a current fan belt ad, no advertising of any kind appears on the front side.

Fleetmen who have not received the posters and who would like copies, should contact Dayton Rubber Mfg. Co., Dayton, Ohio.



TRIPLE VALUE Motor Oil for hard-working gasoline-driven fleets

Now . . . AMALIE gives you a superior fleet oil for cleaner engines and smoother, trouble-free performance under toughest operating conditions. It's AMALIE E-D (Extra Duty). It has the naturally greater oiliness of all AMALIE oils — straight-run refined from premium Pennsylvania crudes — plus extra-duty efficiency resulting from the addition of special war-developed ingredients. Fights carbon, sludge and varnish. Prevents bearing corrosion. Ends ring sticking. Guards vital parts against wear. Prolongs engine and oil filter life. Raises gas and oil mileage. It's *stabilized!* So keep engines cleaner, cut down repair layups — with AMALIE E-D.

FOR DIESELS: Specify AMALIE H-D, the complete heavy-duty oil.



SEE YOUR AMALIE DISTRIBUTOR, OR WRITE DEPT. J

AMALIE DIVISION

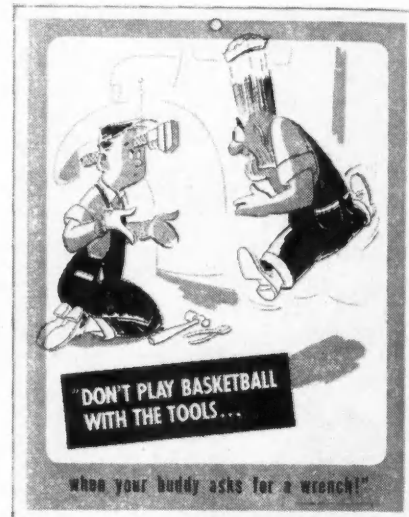
L. SONNEBORN SONS, INC.

88 LEXINGTON AVENUE, NEW YORK 16, N. Y.

Refineries: Petrolia and Franklin, Pa.

Plant: Nutley, N. J.

In the Southwest: Sonneborn Bros., Dallas 1, Texas



Posters dramatize safety with tools . . .
... Safety with exhaust gasses . . .
... Safety around the pit



INTRODUCING...

... EDWARD L. SHEA as president of Ethyl Corp. He was formerly president of Tide Water Oil Co. and later, of the North American Co.

... LAIRD A. HANSON as supervisor of parts and service merchandising for International Harvester motor truck division. He replaces M. D. Dean who has been named manager of the Wichita truck branch.

... JERRY L. KUHL as manager of White Motor Co.'s new San Antonio branch, and Victor J. Pohl as manager of the Fort Worth branch.

... THOMAS RAGSDALE as sales engineer for the mid-west area of C.K. Truck Corp.

... JAMES J. BOYLE as director of sales and marketing and WALTER E. BENNET as manager of the service division for Aluminum Industries, Inc.



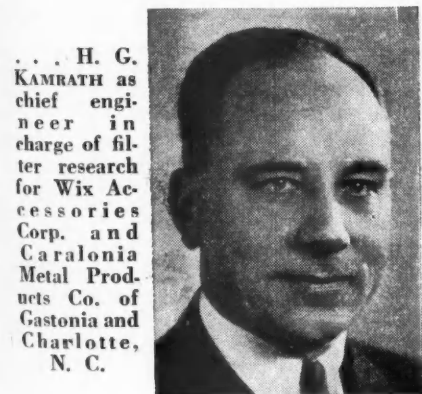
... ROBERT D. O'BRIEN, recently promoted to post of sales manager of the truck division, Kenworth Motor Truck Corp.



... CHARLES E. NELSON, JR., as assistant to the president Waukesha Motor Co. He was formerly director of purchases and factory production manager



... L. DUKE GOLDEN, who has been named director of Perfect Circle Corp.'s automotive clinic for the doctor of motors



... H. G. KAMRATH as chief engineer in charge of filter research for Wix Accessories Corp. and Caralonia Metal Products Co. of Gastonia and Charlotte, N. C.

... ROBERT G. SCHULTE and MARVIN HOFFMAN as Chevrolet zone manager at St. Louis and Omaha, respectively.

... ELGIN S. NICKERSON as general manager of the Fabrics and Finishes Dept., E. I. du Pont de Nemours & Co., succeeding J. WARREN KINSMAN who becomes a company vice-president.

... GUSTAVE TREFFEISEN as sales manager of the Alemite distribution division, Stewart-Warner Corp., succeeding F. A. HITER who now is Alemite distributor in Minneapolis.

... S. J. COFFEY as manager of regions and BYRON A. DULING as manager of engine distribution for Cummins Engine Co.

... ROY E. GREENWOOD as district sales manager for New York and New England districts of American Chain Div., American Chain & Cable Co., Inc.

... J. P. STANLEY as Chicago branch sales manager for General Tire & Rubber Co.
(TURN TO PAGE 168, PLEASE)



is "purpose-tested"

for the

TRUCK BODY MAKER

and made "FOOLPROOF" to better serve your needs

Eberhardware Long Run Truck Body Fittings are accepted as stock items only after the most comprehensive tests under every conceivable condition of service.

Constant contact with truck body manufacturers has enabled Eberhard engineers to aid in producing a line of "purpose tested" Circle E fittings unsurpassed for practical utilization and superior quality.

Illustrated herewith are but four items of the complete line, made foolproof to better serve your needs.

EBERHARD Long Run

TRUCK BODY FITTINGS

EBERHARD MANUFACTURING CO.

Division of the Eastern Malleable Iron Co. 2734 TENNYSON ROAD, CLEVELAND, OHIO



No. 5601



No. 5631



No. 5653



No. 166-B

Eberhard

HINGES
LATCHES
DOOR IRONS
DOOR CONTROLS
DOOR HOLDERS
SEAT IRONS
LOCK HANDLES
SEAT PEDESTALS

LOCKS

REFRIGERATOR
PANEL DOOR
VAN BODY
SLIDING DOOR
ROPE HOOKS
LADDER HOLDERS
ETC.



CCJ NEWSCAST

ATA ANNOUNCES SAFETY PLAN FEATURING DRIVER INCENTIVE

A new "primary safety service" has been developed by the Safety Department of the American Trucking Associations, Inc., featuring an incentive plan under which drivers will receive merchandise awards for their safety records.

The plan is adaptable for truck lines of any size and subscribers become eligible to participate in the "Sights on Safety Campaign," a flexible and economic program aimed at accident-free driving. Two large lines—Bridgeway, Inc., Detroit, and Pacific Freight Lines, Los Angeles—had signed for the new service even before official announcement of it was made.

Basic features of the safety service are:

1. Membership in ATA's Safety and Operations Section, which provides printed material on driver selection, training, supervision, general information on safety and ideas circulated among members for betterment of the trucking industry.
2. A monthly safety bulletin.
3. A monthly letter angled to drivers.
4. Forty-eight bulletin board posters per year, supplied each month as follows—one recognizable accident chart, two safety posters and one national safety campaign poster.
5. Copies of ICC safety regulations, a booklet entitled "Things the Professional Truck Driver Should Know," and ATA's Fire Manual for Drivers.
6. An ATA truck emblem.
7. Participation in ATA's National Truck Safety Contest.
8. Participation in ATA's Safety Campaign.
9. A 20 per cent discount on purchase of forms and materials in excess of those supplied with the primary service.
10. Eligibility to participate in the "Sights on Safety Campaign" providing the plan for driver incentives.

Merchandise awards based on a point system were decided on as the best incentive to safe driving because of their tangible and lasting influence on the driver both on duty and at home.

The first step of an operator under the plan is to determine expenditures to cover the merchandise awards on the basis of what a decrease in accidents is worth. It was brought out that reporting a single accident to an insurance company and to the ICC costs approximately \$7 and that the average cost of an accident, based on a study of 40,289 mishaps, is \$160.

"ACCELERATE IN '48"

"Accelerate in '48" is the slogan adopted for this year's Automotive Service Industries Show to be held on Chicago's Navy Pier Dec. 8 to 13.

DATES & DOINGS

SEPT. 25-27—Indiana Motor Truck Assn. Convention & State Rodeo, Claypool Hotel, Indianapolis, Indiana.
SEPT. 29-OCT. 3—Fleet Supervisor Training Course, University of Kansas, Lawrence, Kansas.
OCT. 1-3—Florida Trucking Assn., Inc., Convention, McAllister Hotel, Miami, Fla.
OCT. 9-10—Iowa Motor Truck Assn., State Convention and Rodeo, State Fairgrounds, Des Moines, Iowa.
OCT. 16—Motor Carrier Assn. of New York Annual Convention, Waldorf-Astoria Hotel, New York, N. Y.
OCT. 16-18—New Mexico Truck Rodeo and Annual Convention, El Fidel Hotel, Albuquerque, N. M.
OCT. 20-24—Fleet Supervisor Training Course, New York University, New York, N. Y.
OCT. 26-30—American Trucking Associations, Inc., Annual Convention, The Biltmore, Los Angeles, Calif.
OCT. 27-31—Fleet Supervisor Training Course, Ohio State University, Columbus, Ohio.
NOV. 3-7—Motor Vehicle Maintenance Supervisors, Second Annual Short Course, Pennsylvania State College, State College, Pa.
NOV. 3-7—Fleet Supervisor Training Course, Purdue University, Lafayette, Ind.
NOV. 5-7—American Society of Body Engineers Annual Technical Convention, Rockham Memorial Bldg., Detroit, Mich.
NOV. 10-14—Fleet Supervisor Training Course, Georgia School of Technology, Atlanta, Ga.
NOV. 17-21—Fleet Supervisor Training Course, University of Florida, Gainesville, Fla.
NOV. 30-DEC. 1—Missouri Bus & Truck Assn., Annual Convention, Hotel Governor, Jefferson City, Mo.
DEC. 5-6—Virginia Highway Users Assn. Annual Convention, Hotel Roanoke, Roanoke, Va.
DEC. 8-13—Automotive Service Industries Show, Navy Pier, Chicago, Ill.
JAN. 12-16, 1948—Annual Meeting Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.
JULY 16-24, 1948—Road Show, American Road Builders' Assn., Soldier Field, Chicago, Ill.

TRUCK OUTPUT AT HIGH LEVEL

New truck registrations for the first six months of 1947 totaled 433,080 units compared with a figure of 231,068 units for the corresponding period of 1946, according to R. L. Polk & Co. New registrations for June amounted to 65,458 units compared with 46,488 in June a year ago. For full details by make and by state, see page 84.

KELLY TO STATE DEPARTMENT

H. H. Kelly, long associated with government motor carrier regulatory agencies has been appointed assistant director of the Office of Transport and Communications in the Department of State. This office is responsible for the international aspects in the Department's policy with respect to various forms of transportation and communications including inland transport.

Take on a Payload

Why do mechanics cuss '47 trucks?
What's the status of bumper controversy?
Will more cars have automatic shifts?
What's the talk about brake ratings?

Read the
DETROIT DISPATCH

on page 68

BUHNER NOMINATED FOR ATA PRESIDENCY

The American Trucking Associations, Inc., has nominated E. J. Buhner, of Silver Fleet Motor Express, Louisville, Ky., to be president, succeeding Ted V. Rodgers, of Eschenbach & Rodgers, Scranton, Pa. Under a previous proposal, Mr. Rodgers would become chairman of the Board.

Other nominations include: H. D. Horton, Associated Transport, New York, to be first vice-president; H. E. English, Sproles-Red Ball Lines, Dallas, to be second vice-president; C. J. Williams, Hillside Transport Co., Milwaukee, to be third vice-president; Leland James, Consolidated Freightways, Inc., Portland, Ore., to be fourth vice-president; Chester G. Moore, Central Motor Freight Association, Chicago, to be secretary, and Charles P. Clark, the Columbia Terminals Co., St. Louis, to be treasurer.

The nominations will be submitted to the Board of Directors for final action during the association's annual convention at Los Angeles, Oct. 26 to 30. Additional nominations may be made from the floor.

LEGISLATIVE ROUND-UP

Alabama has made permanent its present liberalized size and weight restrictions.

Maine's new "Equivalent Gas Tax Law" providing a six-cent-a-gallon tax on gasoline used in the state whether purchased within the state or not, become effective Oct. 1. It is applicable to all interstate motor carriers.

Connecticut, in conjunction with its recently raised gross vehicle weight law (50,000 lb.) has stipulated that vehicles between 40,000 and 45,000 lb. must be equipped with 10 in. tires while vehicles above 45,000 lb. must have 11 in. tires.

Rhode Island is providing temporary permits, without fee, increasing the maximum limit on tractor-semis from 46,000 to 50,000 lb. Permits are good to March 31, 1948, when it is expected that a permanent increase will be enacted.

Nine states are on the loose with toll road plans. Briefly the present legislation is as follows:

California: Authority to California Toll Bridge Authority to include approach roads within 50 miles of toll facilities.

Colorado: A four-lane highway between Denver and Boulder by State Highway Dept.

Georgia: New highway by Georgia Coastal Scenic Highway Commission.

Maryland: Enlarged authority, especially as to construction of auxiliary facilities.

New Hampshire: A toll highway from Seabrook to Portsmouth.

(TURN TO PAGE 96, PLEASE)

WHEN YOU STEP ON THE BRAKE PEDAL...



Midland HY-POWER

Midland Power Brakes

offer many outstanding features:
 Fastest operating booster brake.
 Instantaneous application and release.
 Power applied directly to the hydraulic system.
 No friction.
 No lubrication required.
 Fewer parts.
 Less weight.
 Simplicity and long life.

Assures You Perfect Control

The operator of HY-POWER equipped trucks is apprised by pedal "feel" of the amount of pressure applied to the brakes thru the pedal exactly the same as in brake application on a passenger car — giving the operator accurate brake control.

Design and adaptability of HY-POWER to the vehicle eliminates special valves, cylinders, levers, complicated close-quarter mountings, all outside moving mechanism. HY-POWER is compact — efficient — economical. . . . See your Midland Distributor, or write to us for complete information.

THE MIDLAND STEEL PRODUCTS CO.

6660 MT. ELLIOTT AVENUE • DETROIT 11, MICHIGAN

Export Department: 38 Pearl Street, New York, N. Y.

MIDLAND POWER BRAKES

CCJ Newscast

(CONTINUED FROM PAGE 94)

New York: Collections of tolls on the Fleetwood Viaduct of Westchester County Parkway.

Oklahoma: Express highway from Oklahoma City to Tulsa by Oklahoma Turnpike Authority.

Pennsylvania: Authority to combine revenues of Pennsylvania Turnpike with those of the proposed eastern and western extensions.

West Virginia: Creation of a Turnpike Commission. Specific routes not announced.

Domestic Motor Truck Factory Sales by Gross Vehicle Weight*

	5,000 & Less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
January	25,578	11,103	17,361	15,746	3,259	2,313	2,074	77,434
February	26,051	13,076	19,170	18,150	2,316	2,579	1,934	83,276
March	27,268	16,852	19,358	20,232	3,062	3,254	2,056	92,082
April	24,487	15,978	18,953	14,885	3,582	3,360	2,270	83,515
May	23,532	14,091	17,474	13,028	2,577	2,950	2,044	75,696
June	21,995	10,911	16,320	16,462	2,928	2,837	2,350	73,803
July	22,684	12,903	16,471	19,294	2,305	3,069	1,777	78,503
7 Months	171,595	94,914	125,107	117,797	20,029	20,362	14,505	564,309

* Automobile Manufacturers Association.

GOVERNORS BACK SAFETY PLAN

Two vital phases of the President's highway safety program—adoption by the States of the Uniform Vehicle Code and high school driver training—received strong support from the governors of the

48 States at their recent conference in Salt Lake City.

1947 Truck Trailer Production*

Vans:	June	6 Months
Insulated and refrigerated	150	1,167
Furniture	35	843
All other closed top	1,181	11,724
Open top	71	1,149
Total Vans	1,437	14,882
Platforms:		
With cattle and stake racks	192	1,934
With grain bodies	261	883
All other	356	5,505
Total Platforms	809	8,322
Tanks:		
Petroleum	206	799
All other	44	694
Total Tanks	250	1,493
Pole and Logging:		
Single Axle	264	2,837
Tandem Axle	106	1,040
Total	370	3,877
Low-bed heavy haulers	234	1,304
Off-highway	50	455
Dump trailers	26	481
All other trailers	130	855
Total Trailers	3,306	31,669
Chassis for trailers	238	1,767
Total Trailers and Chassis	3,544	33,436

* Data from Industry Division, Bureau of the Census.
† Totals for January, April and May. No breakdown available for February and March.
‡ Includes furniture vans for February and March and also all tanks for February and March.

CAR & TRUCK PRICES UP AGAIN

The current round of price increases, announced recently, includes the following popular lines:

General Motors on Aug. 1 announced overall price increases of from 2 to 6 per cent covering passenger cars and Chevrolet trucks. GMC truck prices which were raised from \$17 to \$162 at the time new models were introduced the previous month were not affected.

Dodge truck prices were raised an average of \$65 on most truck models during August.

Prices on regular Ford passenger cars and trucks were raised from \$20 to \$97 on August 25.

Studebaker car prices, on Aug. 26, were raised from \$50 to \$115 with the truck increase ranging between \$50 and \$85.

Willys on Aug. 18 announced a hold-the-line policy on Jeeps and two-wheel drive trucks but raised the station wagon price by \$63.34 and the four-wheel-drive truck by \$47.

INDUSTRIAL NOTES

Bendix Aviation Corp. has purchased the assets of Skinner Purifiers, Inc., of Detroit. The Skinner firm, currently doing an annual business of approximately \$1,000,000 will be operated as a new division of Bendix, increasing to 14 the number of Bendix divisions exclusively of subsidiaries.

Dodge Division of Chrysler Corp. is expanding its West Coast passenger car and

(TURN TO PAGE 262)

DON'T BE A Goat



How about it, boys? Whether it's your fault, or not, *you're* the goat when you drop a trailer. Even *usual* coupling fuss and bother are grief enough—especially when it's cold or rainy—but accidental uncoupling is *really* bad business.

SAFETY FIRST

That's why—when ASF engineers put 40 years of railroad coupler experience to work in designing a better 5th wheel—safety was their goal . . . safety that *stays* safe . . . safety with *ease* of operation. That's how Safety 5th Wheels got their name. They *can't* unlock accidentally. Yet a single, simple, *one-hand* movement is all that it takes for uncoupling.

EXPECT THE BEST

You'd expect the Nation's leading producer of cast steel for transportation purposes to build a 5th wheel *right*. And you'll not be disappointed. Before you equip another tractor, get the facts on Safety 5th Wheels. Types for every service. Automotive Division, American Steel Foundries, 400 N. Michigan Ave., Chicago 11, Ill.



The new Series 400-C. Dealers and distributors wherever you go.



Sockets on the plate fit well down over the trunnions so that tractor pull is transmitted in a straight line. Plate won't "lift" under power or braking.

A.S.F. Safety 5th WHEEL

Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY
COMMERCIAL CAR JOURNAL

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or

unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

(2) International Harvester—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a)—Available with Eaton Two-Speed Axle designated KS Models.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix
BL—Brown-Lope.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
H—Hotchkiss.
Her—Hercules.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken.
Tw—Timken-Westinghouse.
TW—Timken-Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
W—Westinghouse.
WW—Westinghouse or Wagner

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
Dp—Dual Primary

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry
c—Cast iron.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
Ti—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive
F—Full-floating.
Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
3/4—Three Quarters Floating.
1/2—Semi-Floating
T—Torque Tube

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE		TIRE SIZES	ENGINE DETAILS		TRANSMISSION		REAR AXLE		FRONT AXLE		BRAKES			FRAME									
			Minimum	Maximum		Gross Vehicle Weight for Normal Service	(See definition)	Standard Front and Rear	Dual rear S-spline rear	Maximum Tire Size (Dual S-spline less noted)	Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.		Main Bearings Number, Diameter and Length	Governor Standard	Model and Make	Gear and Type	Range in High	Model and Make	Location Type	Drum Area	Drum Material	Hand Location	C-A Dimensions (Min. Std. W. B.)	Side Rail Dimensions
1	Available		126	133	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
2	CS-200-SP		105	125	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
3	CS-250-SP		105	125	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
4	CS-400-SP		105	125	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
5	CS-400-SP		105	125	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
6	CS-500-SP		105	125	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
7	CS-500-SP		112	132	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
8	CS-600-SP		Opt Opt	Opt Opt	11.00/20	11.00/20	11.00/20	36000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
9	CS-600-SP		Opt Opt	Opt Opt	11.00/20	11.00/20	11.00/20	36000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
10	CS-600-SP		Opt Opt	Opt Opt	11.00/20	11.00/20	11.00/20	36000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
11	Biederman NSH		130	190	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
12	Biederman NSD		130	190	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
13	Chevrolet EP		843	116	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
14	Chevrolet EP		843	116	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
15	Chevrolet EP		843	116	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
16	Chevrolet EP		843	116	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
17	Chevrolet EP		843	116	6.00/16S	6.00/16S	6.00/16S	4600	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
18	(School bus)		126	133	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
19	QVS		1494	137	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
20	QVS		1515	161	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
21	(e.o.e.)		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
22	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
23	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
24	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
25	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
26	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
27	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
28	QVS		1810	110	6.00/16S	6.00/16S	6.00/16S	15000	6-3 1/4 x 3 1/4	2166	5.174	90-3300	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
29	(School bus)		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
30	Corbett		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
31	25BG		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
32	25BG		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
33	18TC		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
34	18TC		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
35	18TC		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
36	28TC		148	148	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
37	28TC		148	148	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
38	28TC		152	152	8.25/20D	8.25/20D	8.25/20D	20000	6-3 1/4 x 3 1/4	4045	9.286	112-2500	2-3/4 x 10 1/4	YF T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
39	28TC		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
40	28TC		137	137	7.50/20D	7.50/20D	7.50/20D	15000	6-3 1/4 x 3 1/4	2635	9.180	78-2500	2-3/4 x 10 1/4	NW T9	4 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
41	28TC		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
42	28TC		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
43	28TC		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
44	28TC		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
45	28TC		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
46	28TC		145	145	8.25/20D	8.25/20D	8.25/20D	18000	6-3 1/4 x 3 1/4	3205	9.210	95-2500	2-3/4 x 10 1/4	NW T9	5 Tim 53440EH	SF	H	**	67	Tim 32502H	L4IH	a	XL	Opt	10x33 1/4	
47	Crosley		80	1680	4.50/12	4.50/12	1680	1680	4-2 1/2 x 2 1/4	417.5	32.6	26-5100	5-5/8 x 16	WG-ASL-T92	3 Spl	2F	**	-5.17	Own	Haw M						

(Turn to Page 102, Please)

● Sleeper cab models available in 25-27-28 Series with 20 inch longer wheelbase. Total length, 5' 1/2".

(Turn to Page 102, Please)



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(Turn to Page 104, Please)

♣ On 146" and 155" wheel bases, thickness is $\frac{11}{16}$ ". ♠ Dual Rear only; Front 10.00/20, total length 5.750.
 † Auxiliary trans. Spicer 9231B, three forward speeds.
 * Two speed rear axle with vacuum shift and power braking.

20. ‡ For shorter wheel bases $8\frac{1}{4} \times 2\frac{1}{8} \times 1\frac{1}{2}$ inches.
 ▲ Diameter front 2.343. Center 2.375. Rear 2.375.
 * Weight of complete vehicle with 5 gal. of gas.

▲ Rear Only: From 1/2 x 1/4. Free forward speeds.

- **Rear Only:** Front 7.00/15
- For shorter wheel bases
- Auxiliary trans. Spicer 7

Page 104, Please)

(Turn to

HOOD TRUCK TIRE PERFORMANCE TOPS PREWAR

*Nylon shock protectors and weftless rayon cord
provide an unbeatable combination for longer wear*

Why nylon shock protectors? Sharp impacts put more tires out of service than tread wear. To overcome this hazard, Hoods are built with two rubber coated nylon breaker strips laid in between the tread and the cord body.

Strong, yet elastic, these nylon "shock protectors" absorb impacts, make tires more bruise-resistant. Average tire mileage is increased. Danger of tread separation is reduced. More tires can be recapped.

Why weftless rayon cord? In a weftless construction there are no cross-woven cords to saw against each other. Instead, cords lay parallel and flat, completely surrounded by rubber. Hood is able to offer you this cooler-running construction through the use of electronic processing which sets the twist in the rayon cord—permits these cords to be built into the tire in a frictionless method.

Together, nylon shock protectors and weftless rayon cord form an unbeatable combination that will give you even better truck tire performance, longer mileage than before the war.

If it's HOOD, it's GOOD



**HEAVY SERVICE
TRUCK TIRES**

HOOD RUBBER COMPANY, A DIVISION OF THE B. F. GOODRICH COMPANY — AKRON, OHIO AND LOS ANGELES, CALIF.

SEPTEMBER, 1947

Use postage-paid card inserted at page 65 for free information on advertised products

103

Weight of complete vehicle with 3 gal. of gas.

For shorter wheel bases—103 1/2 x 2 1/2. Auxiliary trans. Spicer 703R, three forward speeds.

(Turn to Page 104, Please)

Lockhead Type Front and Timken Dual Primary Rear Brakes.

Auxiliary transmission, Own 24.
Auxiliary transmission Own 24.

Rear only; Front 12.00/24.
Front only; Rear 8.25/20.

Includes Cab.
Rear only; Front 11.00/24.

(Turn to Page 106, Please)

NAL



THE EXTRA CONSIDERATION given to comfort and safety in White Super Power Trucks wins driver preference everywhere. The *exclusive* forced pressure cab ventilating system... better ride quality... additional cab headroom... new steering ease... two-way adjustable seat... and



many other carefully engineered features mean unmatched driver comfort, convenience and efficiency.

Add this *extra* advantage to Super Power low-cost dependability and it is readily apparent why year after year, White Trucks are "First Choice of the 'Pros'".

Correctly selected,

properly maintained and skilfully manned, White Super Power Trucks are *precision tools of transportation*. These three factors are the basis of the cost-reducing Continuing Control System which your White Representative will gladly explain to your advantage.

THE WHITE MOTOR COMPANY

Cleveland, Ohio, U. S. A.

THE WHITE MOTOR COMPANY OF CANADA LIMITED
Factory at Montreal

FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS

SEPTEMBER, 1947

Use postage-paid card inserted at page 65 for free information on advertised products

105

[illegible]

(Turn to Page 108, Please)

STANDARD ENGINEERS NOTEBOOK

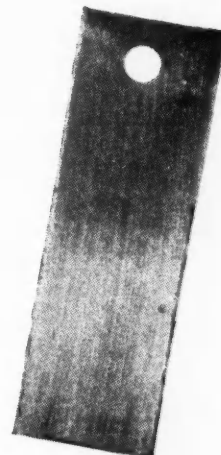
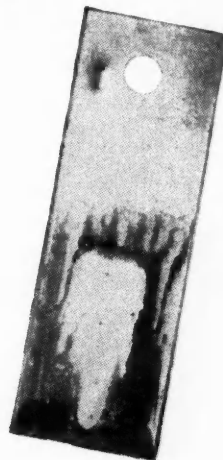
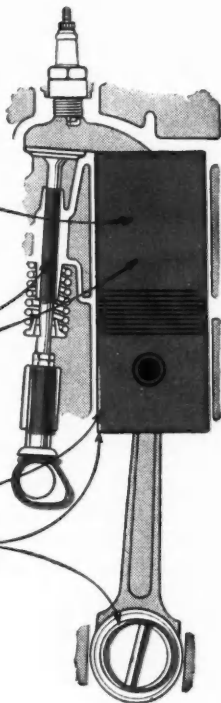


① Adhering agent in RPM Compounded Motor Oil keeps oil film on all parts after engine stops, even on cylinder walls.

② Rustproofing compounds prevent moisture that condenses on cooling parts from contacting metal.

③ No rust is formed to scrape off when engine starts, and cause excessive wear.

④ Constant lubricant film provides adequate and instant lubrication when engine starts.



This actual photograph shows how one HIGH-QUALITY MOTOR OIL "peeled" off almost all of this test strip of steel when it was placed in corrosive-moisture conditions similar to those in a cooling engine. The oil concentrated at one spot and the unprotected surface quickly rusted.

RPM COMPOUNDED MOTOR OIL kept this strip bright and shiny, completely sealed against rusting, when it was exposed to the same conditions. "RPM" compounds keep a constant rust-proofing lubricant film on engine parts at all times, whether they are idle or moving.

How RPM Motor Oil Rust-Proofs As It Lubricates

Rusting, caused by corrosive moisture, is the greatest source of wear in automotive engines (85%, according to some engineers). It can be controlled by using RPM Compounded Motor Oil.

Additional compounding for "RPM," perfected by Standard of California scientists, provides a rust-proofing lubricant film on internal engine surfaces. The heaviest moisture condensation in idle or cold-running engines will not cut through it.

Other compounds in RPM Motor Oil give it adherent qualities so the film stays on parts at all times. They also loosen and remove gum and lacquer, lubricate hot spots, resist sludge formation, bearing corrosion and stop foaming.

Trademark "RPM" Reg. U. S. Pat. Off.

For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif.; The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.; The California Company, 17th and Stout Streets, Denver 1, Colo.; Standard Oil Company of Texas, El Paso, Texas.

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

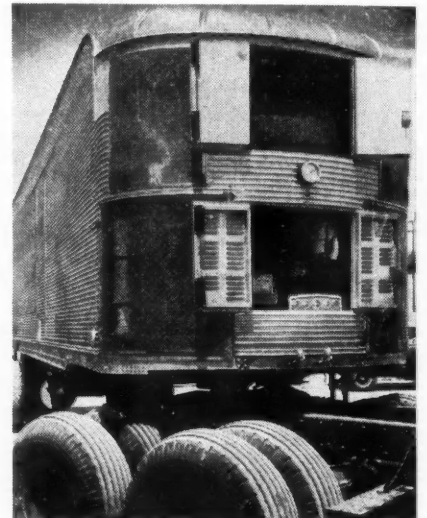
COMMERCIAL CAR JOURNAL

To trucks and truck trailers goes the major part of the job of laying the Trans-Arabian pipe line across 1050 miles of arid wasteland from the eastern Mediterranean to the Persian Gulf. The 30 and 31-in. pipes will be hauled in, mostly in 60 ft lengths by special trailers.

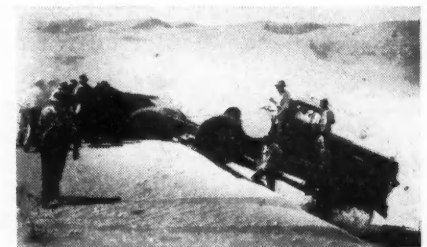
An initial order, placed with the Fruehauf Trailer Co. calls for more than 300 units ranging from more-or-less standard vans for dry freight to highly specialized units such as 40-ton low beds, 3500-gal tankers, floats and stainless steel reefers with extraordinarily heavy refrigeration units.

Six of the 60-ft pipe sections weigh 72,000 lb and make up a typical load as tested on the desert near Yuma, Ariz.

Among tractors selected were a number of specially-designed Kenworth models capable of handling gross loads as high as 100,000 lb. Special features of the six-wheelers include huge Hall-Scott 400 engines, dual radiators to help withstand the 150 deg heat, and 300-gal gas tanks.



Gigantic self-powered refrigeration units are mounted in nose of reefer



Kenworth sixwheeler plowing through desert test. Tire in middle is spare



Here's better than 100,000 lb. on special tractor-trailer combination

Line Number	MAKE AND MODEL	WHEEL-BASE		TIRE SIZES		ENGINE DETAILS					TRANS-MISSION		FRONT AXLE		BRAKES			FRAME							
		Minimum Standard	Maximum Standard	Gross Vehicle Weight For Normal Service	(See definition)	Standard Front and Rear	D-dual rear S-single rear	No. of Cylinders, Stroke	Displacement	Comp. Ratio	Torque lb. ft.	H.P. at R.P.M.	Main Diameter, Number, Length	Governor Standard	Make and Model	Forward Sp'ds	Make and Model	Gear Ratio in High	Range in High	SERVICE			C-A Dimensions (Min. Std. W. B.)	Side Rail Dimensions	Type
																				Make Location	Operat'n	Linking Area				Drum Area	Drum Material	Hand Location
1	Petrol (D) 344DT	13564	189 Opt	43000	10250	10.00/20	11.00/22	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Spt 7741	12 Tim SW 3012W	WF	A 6-00-8-5	21 1734 1/2	W601A	FD	106 1/2	104 1/2	TL			
2	(D) 345DT	13119	189 Opt	43000	17300	10.00/20	11.00/22	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Spt 7741	12 Tim SW 3012W	WF	A 6-00-8-5	21 1734 1/2	W601A	FD	106 1/2	104 1/2	TL			
3	(D) 354DT	14360	187 Opt	56000	17450	10.00/20	11.00/22	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Spt 7741	12 Tim SW 3012W	WF	A 6-00-8-5	21 1734 1/2	W601A	FD	106 1/2	104 1/2	TL			
4	(D) 355DT	14760	187 Opt	56000	17700	10.00/20	11.00/22	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Spt 7741	12 Tim SW 3012W	WF	A 6-00-8-5	21 1734 1/2	W601A	FD	106 1/2	104 1/2	TL			
5	Reo 257L	169	169	47000	12950	10.00/20	10.00/20	Con B6427	6-4 1/2 x 4 1/2	427 5	9324 127-2700	7-2 1/2 x 13 1/2	Y Cla 270V6*	15 T-SD-3000	2F	T 7-5	1020 1472 G	W601A	TD	108 1/2	91 x 3 1/2	CP			
6	Sterling HBS130	164	183	32000	11000	8.25/20	10.00/20	Wau 6MZA	6-4 1/2 x 4 1/2	404 5	290 30-3000	7-3 1/2 x 12 1/2	Y Fu 5443	5 T-SBD155DPH	2F	L 6-80-13 1/4	654 1132 A	TG1HV	TX	83	9 x 3 1/2	A			
7	HDS140	164	183	32000	11800	8.25/20	10.00/20	Wau 6MZA	6-4 1/2 x 4 1/2	404 5	290 30-3000	7-3 1/2 x 12 1/2	Y Fu 5443	5 T-SBD155DPH	2F	L 6-80-13 1/4	654 1132 A	TG1HV	TX	83	9 x 3 1/2	A			
8	HWS225	182	193	52000	14700	11.00/24	11.00/24	Wau 145GK	6-4 1/2 x 6	779 6	255 186-2100	7-4 1/2 x 16 1/2	Y Fu 5462	5 T-SW 3010PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
9	HWS160B	182	193	42000	13200	10.00/20	11.00/24	Wau 145GK	6-4 1/2 x 6	779 6	255 186-2100	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
10	(D) HWS233H	182	193	42000	13200	10.00/20	11.00/24	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
11	(D) HCS195	170	189	48000	13300	10.00/20	11.00/24	Wau 145GK	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
12	(D) HCS205	182	193	50000	14500	11.00/24	13.00/24	Wau 145GK	6-4 1/2 x 6	779 6	255 186-2100	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
13	(D) HCS235	182	193	50000	14500	11.00/24	13.00/24	Wau 145GK	6-4 1/2 x 6	779 6	255 186-2100	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
14	(D) HCS265H	174	187	8000	20150	12.00/24	14.00/24	Wau 145GK	6-4 1/2 x 6	779 6	255 186-2100	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
15	(D) HCS195H	182	193	48000	16000	11.00/20	12.00/24	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
16	(D) HCS265H	182	193	60000	18100	11.00/20	12.00/24	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
17	(D) HCS297H	182	193	70000	21050	12.00/24	14.00/24	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
18	(D) HCS350H	174	187	8000	20150	12.00/24	14.00/24	Cum HB600	6-4 1/2 x 6	672 17	500 150-1800	7-4 1/2 x 16 1/2	Y Fu 4B86	4 T-SW 3012PA	WF	L 5-40-8 50	1074 1554 A	W601A	TX	83	9 x 3 1/2	A			
Truckcell																									
20	C-FX26 2F	156	237	26000	45000	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	**	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
21	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
22	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
23	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
24	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
25	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
26	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
27	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
28	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
29	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
30	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
31	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
32	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
33	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
34	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			
35	C-FX27 0 2F	156	237	27000	45450	7.50/20	8.25/20	Ford	6-4 1/2 x 6	239 6	450 100-3500	7-4 1/2 x 16 1/2	Z Ford	8 Ford	SFD	5-80-13 1/4	502 839 30	F01HV	CX	82 1/2	71 x 3 1/2	47			

* Base only; Front 11 00/24

* Auxiliary transmission, Spicer 8031.

* Rear only; Front 12 00/24.

Central Control

(CONTINUED FROM PAGE 45)

the same kind of trucks, equipped with the same supplies and using the same fuel and lubricants, it also knows that it cannot blame poor economy on any of these factors. Then there is the advantage of fixed responsibility. If anything goes wrong with a tire, a battery or a lubricant there is just one man to contact, while truck troubles are apportioned among our three suppliers. Perhaps most important of all is the fact that all our trucks and bodies are completely interchangeable.

The benefit of interchangeability is particularly important in such a business as the ice cream and dairy business. During the war there were many instances where the installation of an army camp or a war products plant would have bogged down the best of local fleets if additional vehicles had not been available promptly. The same thing holds, to a lesser degree, in normal times. Summer seasons in New England resort towns put heavy drains on local equipment, while in other territories the demand for our products may fall way off. It is a simple matter to transfer the vehicles required when even the color scheme is standardized. In some cases decals identifying the local unit are shifted quickly; in other instances there are no local marks and no change is required. But in every phase the vehicle is at once at home, because maintenance personnel are familiar with the units and have standard parts in stock.



"Ever since we went through Yellowstone Park—every hour on the hour!"

Records: Simple but Complete

NATURALLY, a strong centralized operation requires records and to the uninitiated our central files at Schenectady might seem unwieldy. Actually they are quite simple. Of course we have all the records with regard to purchasing, contracting and allocation which any honest operator would admit he had to have, but aside from those we have only one master report which comes in on a monthly basis from each of our oper-

ating units. It is reproduced in Fig. 2 and shows at a glance the amount of gasoline and oil consumed, the mileage and a breakdown of all other expenses for each vehicle. To be sure this form entails a lot of work. But when you consider that our average fleet has a fraction over 18 vehicles and the numerical majority have less than 10, it is not a great deal of work for them. At headquarters I have one male assistant in charge of records, two stenographers
(TURN TO NEXT PAGE, PLEASE)

Tests Prove

ONLY WITH POWERENCH CAN YOU PROPERLY TIGHTEN WHEEL NUTS

- Torque tests on truck wheel nuts picked at random from operating vehicles reveal that wheel nuts tightened with ordinary wrenches average less than 200 foot pounds—about half the manufacturer's specifications.

This explains why so many nuts continue to loosen on the road, resulting in broken studs, egg-shaped holes, stripping, with attendant costly road delays and expensive servicing.

Powerench—with its unique, patented, 3-to-1 geared power—provides the serviceman in the shop, or the truck driver on the road, all the power he needs to properly tighten nuts to specified 350 to 450 foot pound requirements.

And of course, *Powerench* is ideal for loosening tight nuts, and for removing nuts when stud is broken.

ONLY \$19.85

B.K. Sweeney
MANUFACTURING CO.

1601 23rd Street
Denver 17, Colorado

Powerench Div., Dept. -7
B. K. SWEENEY Mfg. Co.
1601 23rd St., Denver, Colorado

For a free demonstration of your Powerench, please advise name and address of your nearest distributor.

(Name) (Company)
(Type operation—No. trucks) (Street, Zone)
(City) (State)

Central Control

(CONTINUED FROM PAGE 111)

as well as a comptometer operator.

These records become a guide to both fleet and individual vehicle efficiency. Because these forms can tell us so much, I make it a practice to go over each one personally every month. Experience has taught us how to spot trouble in a hurry and as a result of these records we take prompt action to correct the trouble

either by solving some personal equation which may be involved or by recommending specific action such as engine overhaul or even a replacement vehicle when available. This latter feature, incidentally, takes the record keeping function way out of the policing stage and insures utmost cooperation from the field.

Once a year a detailed summary of these reports is prepared in mimeographed form such as the one shown, in part, in Fig. 1. This annual report is addressed to the various

plant managers giving them as well as the man directly in charge of their trucks a chance to see where his unit stands in direct comparison with other units.

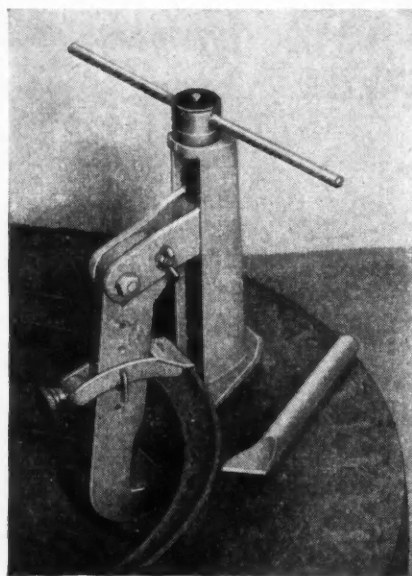
An unusual feature is the column headed "average size." For this we use the old nominal ton rating, because our vehicles are so standardized that they may be more easily identified in this rating than in the admittedly more accurate gross vehicle weight rating. But by thus averaging the vehicle size, a much fairer comparison of operating costs may be obtained between the plants which sometimes have widely divergent vehicle types.

Speaking of weights, an interesting feature of our ice cream trucks, comprising approximately half the total fleet, is the fact that the empty truck is two-thirds gross loaded—down on the helper springs. That is the price we have to pay for hauling around our heavy but nonetheless highly efficient cold-storage "rooms." It is a factor that definitely enters into our overall costs, precludes comparison of our operating figures with other types of fleets. It also is a material factor in our chassis and body selection and constitutes a major part of our decision to fabricate the majority of our own bodies.

(TURN TO PAGE 114, PLEASE)

At Last—
a Really **FAST,**
EFFICIENT and
EASY-to-HANDLE
Big Tire Demounter
at **LOW COST!**

BISHMAN TRUCK TIRE REMOVER



No. 860, Pat. Pending. A Time Saver,
Labor Saver, Money Maker in any shop.

Speeds up tire work—conserves man power—handles disc wheel as well as other flat base types—all sizes up to 12-inch tires (8½ inch rims between flanges). Quickly adjusted to fit different size rims. Extra heavy all steel construction—strength and durability PROVEN in service.

LIFTS the Rim OUT—even when badly "frozen"—without damage to tire or rim! With tire on floor, the BISHMAN Truck Tire REMOVER is quickly clamped to rim, with the properly shaped pusher pressing against tire bead. Then, by turning the handle, the tire is pushed down while the rim is pulled up. No hydraulic or air power required. A single REMOVER will do the job by moving it around on the rim—or 3 or 4 REMOVERS may be used at one time for a real fast job. The low price and easy portability of this tool make it profitable for most shops to have at least 3 or 4 of them. Easily carried in service truck.

No. 860 TRUCK TIRE REMOVER, complete with special driver shown, dealer cost **\$29⁷⁵**

ASK YOUR JOBBER or Write Us

BISHMAN MFG. CO., OSSEO 4, MINN.

BISHMAN



PAUL G. HOFFMAN WOULDN'T BE PRESIDENT OF STUDEBAKER IF HE HAD FOLLOWED THIS GENTLEMAN'S ADVICE ABOUT AUTOMOBILES: "STAY AWAY FROM THIS BUSINESS. IT WILL BLOW UP JUST LIKE THE BICYCLE BUSINESS DID."

- ☐ HORACE GREELEY
- ☐ N.H. VAN SICKLEN
- ☐ PHINEAS T. BARNUM
- ☐ THOMAS A. EDISON

Answer on P. 114



"This Mahwah, I gotta see!"

IF YOU were around the American Brakeblok I plant the way I am, you'd keep hearing the word "Mahwah."

Finally I growled to an engineer, "What's this Mahwah? Sounds like a summer resort. How's the swimming there?"

"It's not swimming, Stopper—it's *stopping* that's made Mahwah famous," he came back.

"Stopping, stopping, stopping! That's all I hear around here," I snorted.

"And why not? That's our business," he said and went into a story about the big American Brake Shoe Research Center located at Mahwah, New Jersey. He told me about the giant dynamometer that reaches speeds of 120 miles an hour. And about experiments with new materials and fancy scientific equipment.

I got so interested I yipped, "Say, this Mahwah, I gotta see! They may even have scientific cats to chase!"

Big things are always underway at Mahwah for anyone interested in

brake service. Much of the basic research done there helps make safer, surer stops for you and your customers. It helps us to manufacture *the best brake lining that can be made.*

If you are in the brake service business, the pay-off for you is in greater customer satisfaction—and the good word your customers will spread of the great brake relining job you do.

In a heavy duty operation, cost records will tell you in a hurry that American Brakeblok delivers the most safe stops at the lowest cost per stop. Why not run a test with American Brakeblok Brake Lining on one vehicle and see.

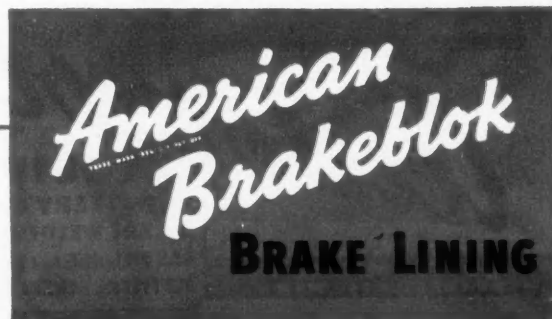
In any case, next time you reline brakes, make sure of genuine American Brakeblok Brake Lining—readily available in the correct size for all passenger cars, trucks and buses.



Distribution through 39 strategically located NAPA Warehouses



AMERICAN BRAKEBLOK DIVISION
DETROIT 9, MICHIGAN



Central Control

(CONTINUED FROM PAGE 112)

Driver Training

WITHIN the last year we have instituted a very comprehensive driver selection and training program. It constitutes still another advantage of centralized control, for no small fleet could possibly afford the expense of a full-time highly trained specialist in this field. In setting it

up we began with the conviction that no one program is adaptable to the needs of every fleet. We knew it had to be tailored to our own requirements. So we set out to do just that and can now offer the plan in complete "packaged form" to each of our operating units with the satisfaction of knowing that it works. About one-third of our units are now using it and the results at the plants which have been using it have shown startling improvements not only in accident reduction but in improved main-

tenance. The two go hand in hand for we have discovered that when a driver is proud of his vehicle as well as his driving record, he takes much better care of it. Believing that the plan may be helpful to others, **COMMERCIAL CAR JOURNAL** has agreed to publish the details in a forthcoming issue.

As each new truck goes into service it is assigned a serial number by headquarters. Even here we have a handy feature that simplifies records and greatly helps in immediately telling just by looking at it how long the vehicle has been in use for the first two digits represent the year it was placed in service. When a supervisor writes in that truck No. 35468 is in bad shape and should have high priority on the replacement list he does not have to describe it further. We know that it has been in use for 12 years.

During the war years we instituted a survey of parts and equipment in stock at the various garages and found it so helpful that we have continued it at periodic intervals. We send each shop a questionnaire asking them to list serviceable parts on hand and then compile a master sheet which is sent to all units. This list includes everything from piston sets to 1/3 hp. electric motors to complete engines. Condition (i.e., new, rebuilt, used) is indicated as well as the vehicle type for which it is intended when such information is appropriate. The foremen know the plan works both ways and are generally glad to cooperate.

Passenger Cars

THE company has a very liberal policy with regard to the use of passenger cars assigned to individuals. Each plant manager is free to determine to what extent company-owned cars may be used for personal use which includes driving to and from work and in the course of per-

(TURN TO PAGE 116, PLEASE)

● WHO SAID IT?

ANSWER... (To Question on P. 112)

N. H. van Sicklen, who was publisher of "Motor Age" at the time. Shortly thereafter van Sicklen sold his magazine. Since then, Hoffman, "Motor Age" and the automotive industry have all done quite well.

(Another Carton Quiz is on P. 116)



- Accurate 30 Second Test
- Tests Before Charge
- Automatic Time Switch
- Exact Charging Time
- High Rate Discharge

The Marquette "180" Hi-Rate Charger combines all the essentials to give you Speed where you need it most—Speed in Testing! You know in a jiffy the *Exact Battery Condition* and *Exact Charging Time*. Entirely automatic, "Just set it and forget it" . . . the Automatic Time Switch shuts off charger at end of charging period.

New type sensitive Circuit Breaker protects both battery and charger against accidental overloads and reversed leads. Cycling Rejuvenates sulphated batteries. Individual Cell Check. 100 ampere capacity even on low line voltages.

Ask your Marquette Distributor to show you the new Marquette "180" Hi-Rate—he will point out its many Money Saving features.

SOLD EXCLUSIVELY THRU THE NATION'S LEADING DISTRIBUTORS

MARQUETTE

REGISTERED U.S. PAT. OFFICE

Automotive

EQUIPMENT

BATTERY CHARGERS

A.C. ARC WELDERS • ELECTRODES

GAS WELDING AND CUTTING EQUIPMENT

ACETYLENE GENERATORS • ACCESSORIES

MARQUETTE MFG. CO. INC.
MINNEAPOLIS 14, MINN.

"My Jobber Can Restore

COLLAPSED PISTONS..."



The revolutionary Moog Piston Expanding Method restores collapsed pistons, all types, permanently and economically.

Here is an accurate, simple, fast method of reconditioning worn pistons. Your Moog jobber can now give you this modern service. Ask him today.

With Moog X-Plus Piston Rings and the Moog Piston Expanding Method you have the *right combination* to put Full Power back into worn motors and eliminate costly comebacks.

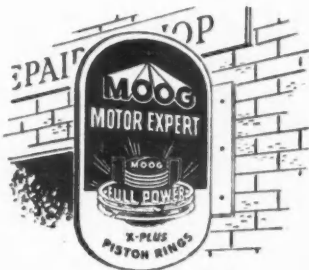
MOOG PISTON RING CO.

Division: MOOG INDUSTRIES, INC.

ST. LOUIS 14, MO.

BE A MOOG MOTOR X-PERT

and give Full Power
Reconditioning with
America's fastest
growing ring line.



**Backed by 10,000 Mile
Ring and Labor Guarantee**

COPYRIGHT 1947 M. I.I.

Central Control

(CONTINUED FROM PAGE 114)

sonal business. Each driver submits a simple monthly report showing a breakdown of his mileage and for all mileage credited to personal use he is expected to purchase his own gasoline. Again it is only the exceptional case where this liberal policy has been abused, and when that happens we usually find out about it pretty quickly.

We do have a number of rules which are strictly enforced such as requirements for inside storage and periodic lubrication and service checks. The latter are obtained at company garages when possible, and under contract agreements with local service stations when company shops are not available. With each car goes a comprehensive illustrated booklet entitled "Your Company Car." It gives all the facts the driver needs to know, together with a few simple driving hints, such as proper use of

the clutch, and full instructions with regard to accident procedure.

District Supervisor Plan

THUS far we have discussed our headquarters operation and some of our more general policies. Of course it takes a lot more than that to operate a fleet of our size and distribution. The chart shown in Fig. 3 shows the basic structure of our transportation department set-up. First of all you will note that the fleet is divided into three districts, each under the jurisdiction of a district supervisor. An interesting sidelight is the fact that the average length of service with the company of these three supervisors is almost exactly 25 years. They know company policies as well as any of us and act accordingly. Often they go to bat between themselves and with me concerning matters in their territories, but invariably differences of opinion and eagerness to meet their own needs are resolved for the best of all. On the same level is the superintendent of our body shop, concerning whose operation we will have more in a later issue.

As this article is primarily concerned with the headquarters function of a scattered fleet, we won't take time for the details of our comprehensive and standardized preventive maintenance and overhaul procedures. Suffice it to say they do exist. But at the service level we have three types of functions.

(TURN TO PAGE 118, PLEASE)



The NEW addition is an Elston Electric Sander made especially for "Pick-Up" Trucks. This new member bears a close resemblance to its big brother; it operates with the same speed and efficiency as the large sander now used by thousands on heavy duty trucks.

It is now possible to give your Pick-Up Truck better footing, or better traction, which will assure added mobility in all kinds of weather. You can increase the efficiency of your Pick-Up and save much precious time by equipping it with Elston Electric Sanders. This equipment will prove its value to you over and over again.

FOR COMPLETE INFORMATION CONTACT YOUR SUPPLIER

HIGHWAY SAFETY APPLIANCES, INC.

1381 MARSHALL AVENUE • ST. PAUL 4, MINNESOTA

WHO IS IT?



CAN YOU NAME THE AUTOMOTIVE LEADER WHO WAS NAMED "MAN OF THE YEAR" BY THE NEW YORK FINANCIAL WRITERS' ASSOCIATION?

- ☐ ALFRED P. SLOAN JR.
- ☐ HENRY FORD II
- ☐ ROBERT F. BLACK
- ☐ CHARLES W. NASH

Answer on P. 118



**WHY PASS UP 40% EXTRA
TIRE MILEAGE?**

Specify
Firestone

**R-5° FULL ADVANCED RIMS
ON YOUR NEW TRUCKS**

FIRESTONE Advanced Rims are designed to interchange with **ALL** former types of flat base rims without change in spacings. For example, dual mounted 10.00 or 11.00 tires on Firestone R-5° Rims have the same clearances, the same loaded radius as with standard flat base rims. Rims can be paired indiscriminately with other types of flat base rims—without danger of mismatched duals or clearance damage. Firestone R-5° Full Advanced Rims are the only new wide base rims that will completely interchange with your old rims.

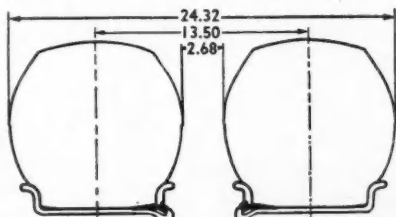
Firestone Advanced Rims increase tire mileage as much as 40 per cent. You can have this extra tire mileage without a penny's cost. Simply specify "Firestone R-5° Full Advanced Rims" on your next truck order.

Listen to the Voice of Firestone every Monday evening over NBC
Copyright, 1947, The Firestone Tire & Rubber Co.

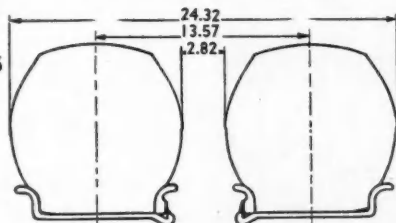
**INTERCHANGE ON SAME
WHEELS WITH ALL
FLAT BASE RIMS**

**COMPARISON
OF
CLEARANCE
DISTANCES**

10.00 TIRES-DUALS



NEW 7.5 R-5° RIM



7.33V (9-10") TYPE R RIM



**5 MAJOR
IMPROVEMENTS**

- Both Tire Beads Uniformly Supported by Full 5° Tapers
- New Flange Contours
- 70% Ratio Rim to Tire (Full Wide Base)
- New Safety Features
- Continuous Base and Side Ring

FIRESTONE ADVANCED RIMS ASSURE TOP TIRE MILEAGE

Central Control

(CONTINUED FROM PAGE 116)

First, the district garages of which there are five. Each of these has its own paint shop and complete facilities for major overhaul of both vehicles and component parts. These district garages handle major and minor repairs for all vehicles assigned to their immediate location and also handle the processing of new vehicles and major repairs of all

vehicles assigned to its entire district.

Second, the plant garages of which there are 23. Each of these is equipped for daily service, preventive maintenance and minor repairs up to and including either a ring job or replacement of engine or other component. Beyond this step for major repairs, body work, wrecks, etc., the vehicles are routed to a district garage. Really bad wrecks incidentally are routed clear up to the Springfield body plant, where complete rebuilding constitutes about 40

per cent of their work. These plant garages also handle periodic inspections and minor repairs for detached fleet units which have no garage but which are so geographically located that routing to the plant garage is economically possible.

Finally there are the units with no garage at all. In virtually all of these cases specific contract arrangements for servicing are in effect. A number of such small units rely entirely on the service department of a truck factory from which they came and which happens to be in their territory. Others have agreements with dealerships or independent repair shops. All enjoy the same contract arrangements as all our other units, for gasoline, oil, tires and other supplies.

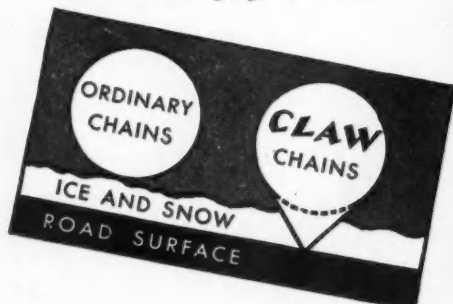
END

(Please resume your reading on P. 46)



Avoid the dangers of stalling and slipping. Use CLAW Tire Chains. The knife-sharp wedge of extra steel bites in at the point of traction...gives positive grip on ice or snow. CLAW links are made of a special, hardened alloy steel...have 20% more steel in every link...give extra mileage...provide added safety.

Avoid delays...danger...embarrassment. You can use and recommend CLAW Tire Chains with confidence. Columbus-McKinnon Chain Corporation, General Offices: Tonawanda, N. Y., Plants at St. Catharines, Ont., Can. and Vereeniging, So. Africa.



CLAW
TIRE CHAINS
for
PASSENGER CARS,
TRUCKS and BUSES

NEW DETECTOR SHOWS CO

A detector developed and manufactured during the war, by the National Bureau of Standards, may save many deaths from carbon monoxide poisoning each year.

The N.B.S. Carbon Monoxide Indicator is used for "the rapid determination of infinitesimal" amounts of carbon monoxide in the air. It is the most sensitive instrument of its kind known to science. The detector is about the size of a pencil and was used extensively during the war to detect poisonous fumes in plane cockpits, tanks, etc.

The Indicator will detect and closely estimate less than one part of carbon monoxide per 500 million parts of air, which allows a big safety factor because it takes about one part of carbon monoxide in 10,000 parts of air to affect the human system. Field use requires only a small, inexpensive apparatus without maintenance problems, and involves procedures so simple that untrained personnel can obtain reliable results.

The detector consists of a small glass tube sealed at both ends and a rubber bulb all packed into a small kit that fits into the pocket. When the presence of monoxide is suspected the kit can be opened, the tip broken off a small tube and one end inserted in the bulb to draw air samples through the chemicals in the tube.

● WHO IS IT?

ANSWER...(To Question on P. 116)

Henry Ford II was given the citation as being "the man in finance or industry who, in 1946, contributed most in advancing ideals at home and abroad."

(Another Cartoon Quiz is on P. 122)

BIT

FOR MORE VOLUME...FOR BIGGER PROFITS!

Prevents Frozen Gas Lines!

- A new WHIZ product licks an old cold-weather problem!
- Absorbs water in gas tank and fuel lines!
- Prevents freezing, rusting, or gum deposits from clogging fuel line and carburetor!
- Helps eliminate fouling of plugs!

Keep your trucks or buses out of trouble this winter! Make ZORBIT a part of your winter maintenance routine. Order from your jobber now! R. M. Hollingshead Corporation. General Offices: Camden, New Jersey. Canadian Offices: Toronto, Canada. Warehouses: Dallas, San Francisco, Chicago.

*Be sure to ask your
jobber about the
Whiz Zorbit Special
Introductory Offer.*



A PRODUCT OF

Hollingshead

LEADER IN MAINTENANCE CHEMICALS

Souping Up Tractors

(CONTINUED FROM PAGE 63)

We bought downdraft manifolds and carburetors and replaced the up-draft equipment. To make room for the air cleaner we cut a hole through the floor of the cab and covered it with a dome of welded steel. This dome is located in the right side of the cab floor. The change resulted in better gasoline mileage and an increase in power.

Next, we changed the sleeves on these International C-O-E's, replacing the 37/8-in. sleeves with 41/8-in. sleeves. Both have the same outside diameter and no change was made in clutch or flywheel. This gave us a 361 cu in. engine, and the tractors are doing a splendid job with the tandem trailer loads. No crankshaft change was made to gain these 361 cu in. engines, and on changes were required in the cylinder heads.

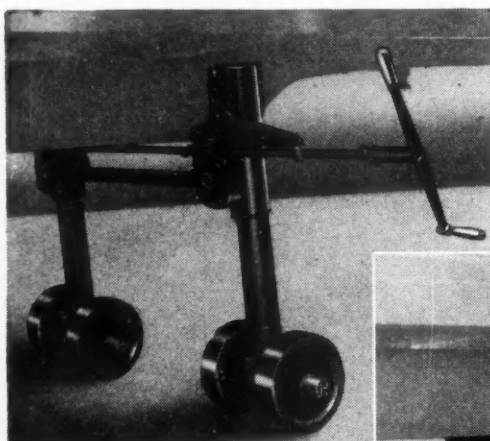
Five of our 318-cu. in. White trucks (37/8 x 41/2 in.) have been

changed into the next higher power bracket. Since the White engine does not have sleeves, we did not rebores. Instead, we installed new crankshafts, new pistons and rods to increase the stroke. After dismantling we first cut out any ridge that might be in the upper piston wall. Then we replaced the crankshaft with the shaft as specified by the manufacturer for the next higher powered engine. This crankshaft has a 51/8-in. throw as compared with the original 41/2. This gives a displacement of 362 cu in. (37/8 x 51/8 in.). Here we were faced with the problem of head room. We replaced the old piston with a 30-A piston, which while having the same diameter is shorter from the pin hole to the top and this allowed us to use the old head without any appreciable compression ratio changes. Present ratio is 6.28 to 1.

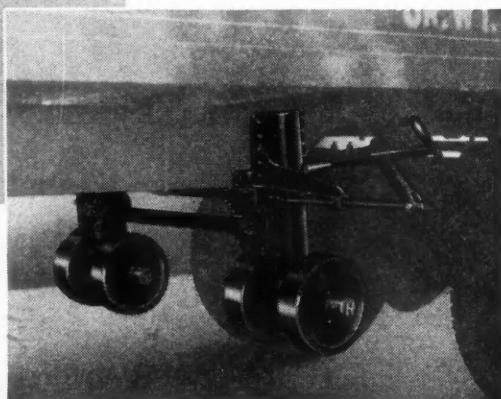
One of the important points in these changes is that all the parts are listed in the parts books of the manufacturers and are readily available through the customary sources. No special parts of any kind were used.

On all the units changed as enumerated we have had excellent results and there has been no change in the service requirements. Drivers report excellent results with the increased power.

We did not change radiator capacities or spark plugs in any of
(TURN TO PAGE 124, PLEASE)



HOLLAND



IMPROVED

Vertical Lift LANDING GEAR

The Nationally Known and Approved Standard

Load Lifting Power
unequalled by any
other type.

18" ground travel
clearance—6" more
than others.

Safe—Simple—Durable
Fast and Easy.

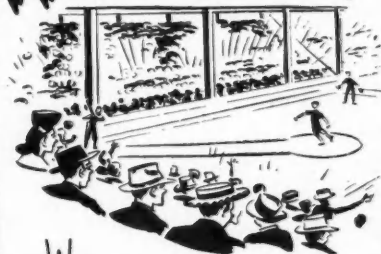
Features are engineered into the Holland V-400 Vertical Lift Landing Gear which make it the choice of those most experienced in truck and trailer operations. Its tremendous lifting power, with speed and ease, is matched by its great safety, simplicity, and durability. Made by the makers of the well-known Holland Fifth Wheel and Holland pintle and couplers.

ENGINEERED BY

HOLLAND HITCH COMPANY

HOLLAND, MICHIGAN, U. S. A.

Which is it?



WHICH OF THESE EVENTS
HAS BEEN CALLED THE "WORLD
SERIES OF TRUCK-DRIVING"?

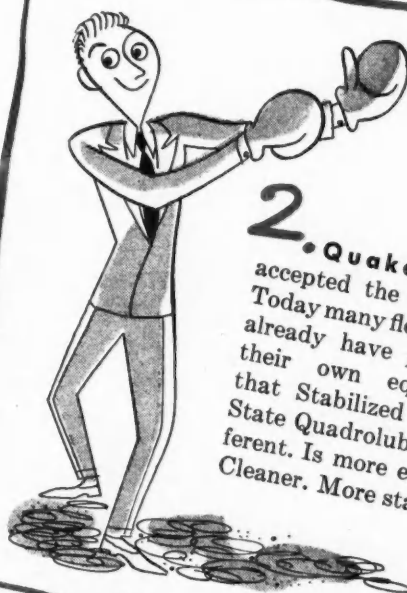
- ☐ THE NATIONAL TRUCK SHOW
AT MADISON SQUARE GARDEN
- ☐ THE NATIONAL TRUCK
ROADEO
- ☐ THE ANNUAL SAFETY COM-
PETITION OF THE A.T.A.

Answer on P. 124

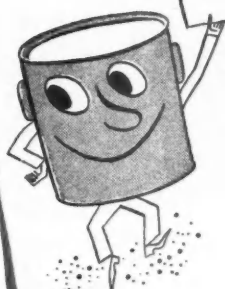
You said, "Give us a better more lasting gear lubricant!"



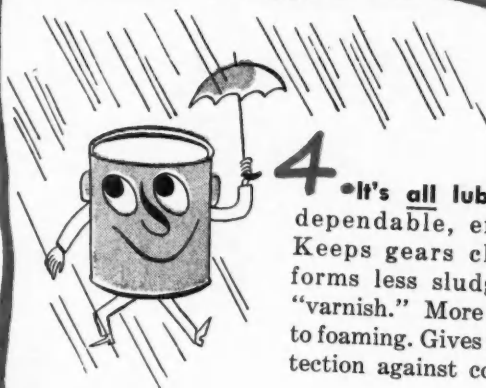
1. For years, folks responsible for keeping buses, trucks, taxicabs, and tractors in top-notch operating condition have said: "Why doesn't somebody make a better gear lubricant? One that will do a better, cleaner, more lasting lubricating job. One we can always depend on!"



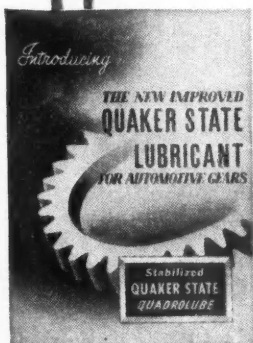
2. Quaker State accepted the challenge. Today many fleet owners already have proved in their own equipment that Stabilized Quaker State Quadrolube is different. Is more efficient. Cleaner. More stable.



3. Yes, stable! Its base oils are made entirely from pure Pennsylvania grade crude oil... with the plus factor of Quaker State's "know-how" in refining and compounding.



4. It's all lubricant... dependable, enduring. Keeps gears cleaner—forms less sludge, gum, "varnish." More resistant to foaming. Gives more protection against corrosion.



5. Get the facts—the evidence. Send for this booklet for proof that Stabilized Quaker State Quadrolube will do a better lubricating job in your equipment.

STABILIZED QUAKER STATE QUADROLUBE

AND SUPER QUADROLUBE*

*Specially compounded for the lubrication of hypoid gears.

No gear lubricant can be better than the oil it contains. The base oils in Quaker State gear lubricants are made from pure Pennsylvania grade crude oil. Quaker State offers a complete line of automotive lubricants scientifically made from the finest raw materials obtainable.

QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PENNSYLVANIA

SEPTEMBER, 1947

Use postage-paid card inserted at page 65 for free information on advertised products

123

Souping Up Tractors

(CONTINUED FROM PAGE 122)

them. We found that the cooling remained adequate and that there was no change in our operating temperatures or in the octane number of the gasoline required.

Clutches are showing no ill effects from the increased engine power and there is no noticeable increase in vibration. No change in oil consumption has been indicated, and we use

the same type engine oil as before.

The fact that on changes have been necessary in the accessories, such as clutches, flywheels, radiators, sparkplugs, and cylinder heads, indicates that such parts are engineered with an extra capacity—a decided and welcome advantage. We found, however, that this extra capacity has a limit when we rebuilt the 318-cu in. into a 450-cu in. engine. This engine proved conclusively that two changes up was not practical. This engine gave us clutch

trouble, differential trouble and transmission trouble. After a short period of experimentation we changed it back to 361 cu in. and our troubles disappeared.

Obviously, if the second step increase in power is desired the user needs to purchase the complete tractor with its clutch, transmission and differential engineered to its power.

We have remodeled three C-O-E Internationals and five Whites. All are running in regular service. As each engine overhaul period comes up we are now making the proven changes as outlined.

Tires Increased from 9 to 10 in.

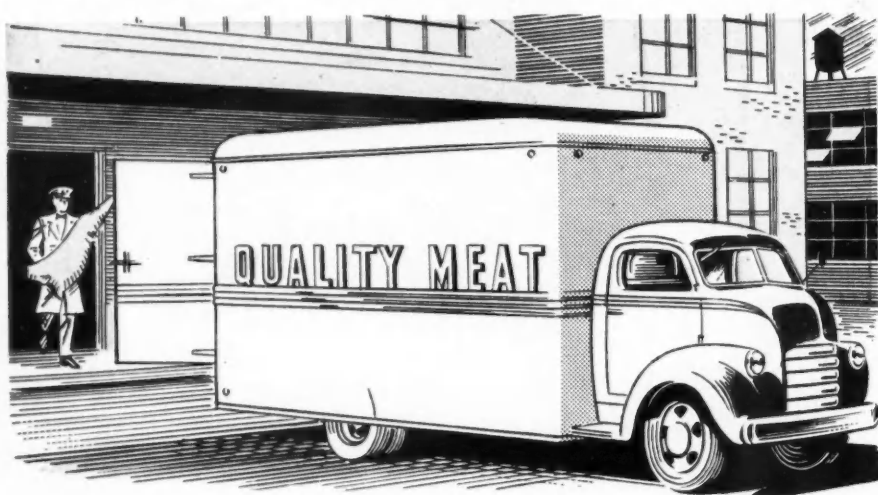
ANOTHER problem we had in adapting our tractors for the new tandem loads was in increasing our tire sizes from nine to 10 inches. We not only needed the extra traction but we needed to support the extra weight.

There are several methods of doing this. One which we decided *not* to use consists of using welded lugs to permit the rims to be set out farther on the wheels. While this provides the necessary clearance we thought it imposed added strain because the outside rim was so far from the axle.

We moved the wheels out $\frac{1}{4}$ in. instead of the rims, by making a spacing washer out of $\frac{1}{4}$ -in. square key stock and fitting it behind the inside bearing cup. We make these spacers in an ordinary hydraulic press and they are easily inserted by hand. It only takes a few minutes to make a washer and it eliminates all machine work on this part of the job.

To allow for the amount the wheel is moved out and to give room to install the axle nut, we have the outside bearing surface inside the hub machined a quarter of an inch deeper. By moving the wheels out in this manner we keep the same angle of pull from axle to wheel and tires to road as we had originally.

(TURN TO PAGE 126, PLEASE)



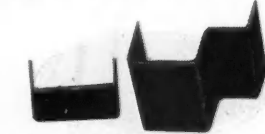
NOW—YOU CAN GET A CUSTOM BODY WITH STANDARD PARTS!

HART SAVES YOU TIME • MAINTENANCE • COSTS!

Don't be stymied by special body design. Hart supplies all the parts to produce a job to your individual requirements. Hart Service also includes styling, body design, engineering, dies and tools.

Have your body builder tell us your problem. By using Hart Service he'll not only furnish what you need, but save you time and money too. And replacement parts will always be available at quick delivery!

Write to Dept. "C" for Catalog and description of Hart Service.



Left: Cross Sill No. CS-1116
Right: Rub Rail No. RR-1117



Left: Rub Rail No. RR-1119
Right: Body Post No. 1104



Left: Corner Post No. CP-1122
Right: Corner Post No. CP-1120

Body Post • Roof Rails • Rub Rails • Cross Sills • Fenders • Ball Corners • Roof Panels • Cab Roofs • Lintels • Wheel Housings • Roof Reinforcements • Windshield Assembly

A Single Source for Body Sections and Panels

HART

ELKHART, INDIANA

● WHICH IS IT?

ANSWER...(To Question on P. 122)

The National Truck Rodeo, held each year in connection with the Annual Convention of the American Trucking Associations, Inc.

(Another Cartoon Quiz is on P. 126)

5 pointers on how to get the most out of your anti-freeze-and save cooling system parts



PICK THE RIGHT TYPE of anti-freeze. For passenger cars and light-duty trucks with normal-opening thermostats (160° F. or below), a low-boiling anti-freeze like "Zerone" is most economical and requires only an occasional check-up. For passenger cars and heavy-duty vehicles with high-opening thermostats, use a non-evaporating anti-freeze like "Zerex," which withstands high-operating temperatures.



SERVICE THE SYSTEM before installing anti-freeze. Drain, flush, and clean the entire cooling system. Stop all leaks. Check hose connections, thermostat, water pump, heater, and fan. Tighten cylinder head bolts. Make replacements where necessary.



PROVIDE A STANDARD "MIX" of anti-freeze and water for replacing cooling system losses. Use same proportions of anti-freeze and water as used for original anti-freeze protection. Store in tanks or drums.



SPOT LEAKS. Park vehicles on clean floor to check for leaks in cooling system. Small pools of liquid on the floor will indicate leaks and help you find the trouble spots.



SURGE TANKS. If you use a low-boiling anti-freeze, surge tanks installed on the radiator overflow line will reduce anti-freeze losses due to after-boil and sudden stops.

"ZERONE"—\$1.00 A GALLON

"Zerone" is made from the most efficient of all known safe anti-freeze materials . . . needs only an occasional check-up. It's tops for economy when used with normal-opening thermostats on light and medium-duty vehicles.



"ZEREX"—\$2.65 A GALLON

"Zerex" is non-evaporating. In a properly operating cooling system, one filling lasts all winter. Like "Zerone," its chemical inhibitor retards rust and corrosion . . . keeps a clean cooling system clean. There's no better anti-freeze.



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

"ZERONE" AND "ZEREX"

REG. U. S. PAT. OFF. **ANTI-FREEZE** REG. U. S. PAT. OFF.

Souping Up Tractors

(CONTINUED FROM PAGE 124)

The whole job only costs us \$3.50 and we are doing it on all our tractors that will not take 10.00 x 20 tires, whether they are pulling tandems yet or not.

This 1/4-in. gain is not quite enough for practical purposes to clear 10-in. tires. The spring clip sometimes rubs and so we removed the outside thickness of this clip by merely cut-

ting half of it off with a hacksaw. The amount of clip left holds the spring in line without any trouble. This leaves the smooth side of the spring exposed to the tire with a reasonable amount of clearance.

Electric Fuel Pumps & Gages

OUR next step was to remove all mechanical fuel pumps and replace with electric pumps, using two on each side. We find this has eliminated all our previous fuel pump troubles on the road. In going to

the electric pumping system we eliminated at the same time the need for selector valves and now all a driver has to do is to turn his switch to one tank or the other and he has gas coming up. The switch we use is one that has been used in some airplane construction and is readily available. It has two contact points and no off position so that it is always in contact with one side or the other.

Shorter Connections

ANOTHER change we made was in the trailer hook-up connections. We pipe the air hose and electrical connections back from the cab to a point as near to the fifth wheel center pin as possible. By doing this we are able to use 5 1/2-ft lengths of hose instead of the swaying 10-ft lengths and we find we can still shorten length down to 4 1/2 feet. This keeps the cab and trailer clean in the hook-up area. We cover the space in the frame between the back of the cab and the fifth wheel with sheet steel and put a tool box in the cover.

Freight profits demand heavier loads and this extra weight increases the need for more expert maintenance and top notch performance from tractors at all times. Our system has resulted in very little need for road service and we seldom have troubles that cannot be kept until the driver gets into one of our terminals.

END

(Please resume your reading on P. 64)



- ☒ **STRONGER REPAIRS**
Fills, reinforces, vulcanizes the tube injury completely safe. No failures in service.
- ☒ **NEATER REPAIRS**
A smooth, feather-edge repair.
- ☒ **NO FIRE HAZARD**
Safe. Carries the seal of approval of the Underwriters' Laboratories.
- ☒ **NO SMOKE OR FUMES**
Clean electrical operation.
- ☒ **AUTOMATIC**
Automatic shut-off controls time and temperature of vulcanization. No guessing.
- ☒ **HANDY**
Patch and Valve Stem Units come ready-prepared. No waste — easy to inventory.
- ☒ **FASTER**
Completes repair in quickest possible time for perfect vulcanization.
- ☒ **COMPLETE**
Handles all types of repairs in all tubes — synthetic or natural rubber.
- ☒ **LOW-COST REPAIRS**
Dillelectric Patch Units cost less than 4¢ each.
- ☒ **ATTRACTS CUSTOMERS**
Car owners know electric vulcanizing is best—are impressed with Dillelectric.
- ☒ **USED BY OVER 75,000 STATIONS**
No. 1 in tube repair service.
- ☒ **RECOMMENDED**
and approved by all leading tire and oil companies.

Take a Tip from
the Experience
of over 75,000
Service Stations

REPAIR TUBES WITH DILLELECTRIC

• For the best tube repair work — faster, easier, more profitable — you just can't beat Dillelectric. That's why more than 75,000 service stations have changed to this modern safety method. It's all electric with convenient-to-use patch and valve stem units. You simply buff the tube injury, place on a Dillelectric repair unit, and insert it in the clamp. Automatic time and temperature control assures a perfectly vulcanized job every time. There's nothing like Dillelectric for speedy service and guaranteed repair work. Cash-in by getting your low-cost Dillelectric Outfit now. Ask any leading tire company, oil company, or automotive jobber. Or mail a postal card to us for full information.

THE DILL MANUFACTURING CO.

700 East 82nd St.
CLEVELAND 8, OHIO

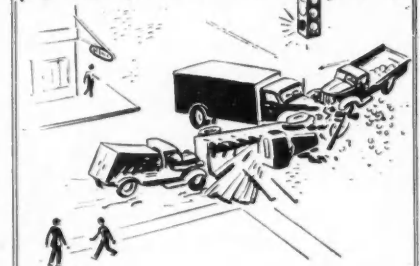
Branch — 1011 S. Flower St.
Los Angeles 15, Calif.



TOPS FOR SERVICE
TOPS FOR PROFIT

DILLELECTRIC
Electrically VULCANIZED
TUBE REPAIRS

WHO IS TO BLAME?



THAT'S QUITE A SMASH-UP THERE.
THE JUDGE WILL PROBABLY BE
TOUGHEST ON THE DRIVER WHO...

- ☐ WENT THROUGH THE RED LIGHT
- ☐ WAS SPEEDING
- ☐ DID NOT HAVE THE RIGHT OF WAY
- ☐ HAD THE LAST CLEAR CHANCE TO AVOID THE ACCIDENT

Answer on P. 129

Chrome-Plating

(CONTINUED FROM PAGE 47)

marked. Bore wear is affected beneficially by the reduced ring wear. These facts are substantiated by the data on military aircraft engines.

Must Justify Cost

"THE data now needed from truck, bus and tractor experience is to justify the cost of chrome-plating. The chrome-plated ring is inherently expensive. The ring has to be very well made and requires many operations over the unplated ring. To short cut these operations is dangerous. It is not a matter of increased production to reduce costs, for during the war the production of these rings was probably greater than what will ever be in peace-time production on any one size.

"In justifying the costs of rings other parts of the engine have to approach the ring life, for if an engine has to be torn down for any other cause, the cost of replating rings is negligible; but, if the engine fails between any period of overhaul because of rings, the cost of tearing down the engine is chargeable against the ring installation entirely and makes this cost very high."

Another piston ring manufacturer sums as follows:

"The question discussed at many times [during the war period] was the benefits of chrome-plating the face of the ring versus the benefits of chrome-plating the cylinder, as far as operation was concerned. In other words, we were constantly working on future practice after salvaging had been accomplished, and trying to determine whether new cylinder sleeves might be chrome-plated. Performance was good and the life of the parts increased in both cases.

"Chrome-plated rings would not function in chrome-plated cylinders.

● WHO IS TO BLAME?

ANSWER... (To Question on P. 126)

In most cases, responsibility for an accident rests with the driver who had the "last clear chance" to avoid the accident but failed to do so. The courts have adjudged such a driver liable even though he may have been observing all traffic laws.

(Another Cartoon Quiz is on P. 130)

so it was important to know which way the industry was going to move. I think the expense of chrome-plating sleeves versus the expense of chrome-plating rings has finally settled this.

"The chrome-plated ring will give a very good account of itself, and is particularly desirable in heavy-duty engines. . . .

"There is still somewhat of a question as to the best type of chrome and, as certain engine manufacturers have put it, the best type is the type that their particular engine likes the

most. We, consequently, have some engine manufacturers specifying a hard chrome with very little etching or porosity. We have others specifying a rather fine grain chrome of the pin-point or rat-tail variety with considerable etching or porosity.

"In the replacement field it is more or less our attempt to use the more porous material in smaller lightweight engines, and the less porous material in the larger, slower-speed, heavy-duty engines.

(TURN TO NEXT PAGE, PLEASE)

A Wayne Feature

THAT MEANS COOLER OPERATION

**DEEPLY FINNED
CYLINDER BLOCKS
in a BLAST OF AIR**

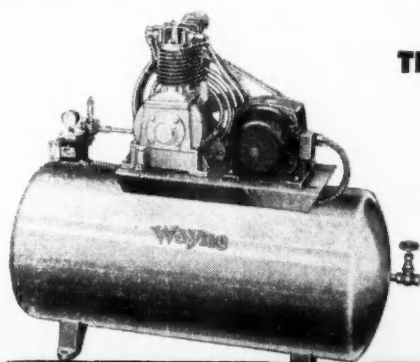
WAYNE'S combination of powerful propeller type fly-wheel with unusually large areas of copper tubing in inter-cooler and after-cooler, both directly in the blast of air, plus deep, thin fins on cylinders, cools the air entering the tank to almost room temperature. This cooler operation means longer compressor life. Write today for catalog of Wayne Air Compressors.



FINNED HEAD
PROPELLER TYPE FLYWHEEL
MANY DEEP THIN FINS

AFTERCOOLER AND INTERCOOLER

THE WAYNE PUMP COMPANY
FORT WAYNE 4, INDIANA



AIR COMPRESSORS

GASOLINE PUMPS - CAR WASHERS - AIR SCALES - HOSE REELS - AUTO LIFTS

Chrome-Plating

(CONTINUED FROM PAGE 129)

"We have had many excellent reports from the field showing anywhere from three to five times the life with ring sets including a chrome-faced ring in the top groove as opposed to ring sets without a chrome-plated ring.

"It is necessary to use a chrome-plated ring only in the top groove, as this ring is the one that receives the

burden of the wear, operating in the dirtiest part of the motor and the part of the motor that is most affected by acids.

Last Several Times Longer

"WE find that the chrome ring not only lasts several times longer than other rings but also increases the life of the lower rings on the piston as well as reducing wear on the cylinder walls.

". . . In fleet operation it seems that the most important thing is the

length of life, or lengthening the period between overhauls. This seems to be more important to the fleet operators than any quick improvement in performance.

"On the other hand, the individual owner, particularly the passenger car owner, wants high oil efficiency at the very outset and is not content to wait several thousand miles for the rings to wear to a perfect seat. Consequently, to satisfy these individuals more porosity is required, which allows the rings to wear more and shortens their life just that amount."

A third ring manufacturer comments as follows: "Experience has proved that the wear rate of compression rings may be reduced 80 per cent by chromium-plating. A similar reduction in cylinder-wear rate is usually experienced. Cases where these figures apply have been observed in both dusty and clean operating conditions. Of course, the increase in effective life is much more valuable and much more noticeable in engines operating under abnormally dusty or dirty conditions.

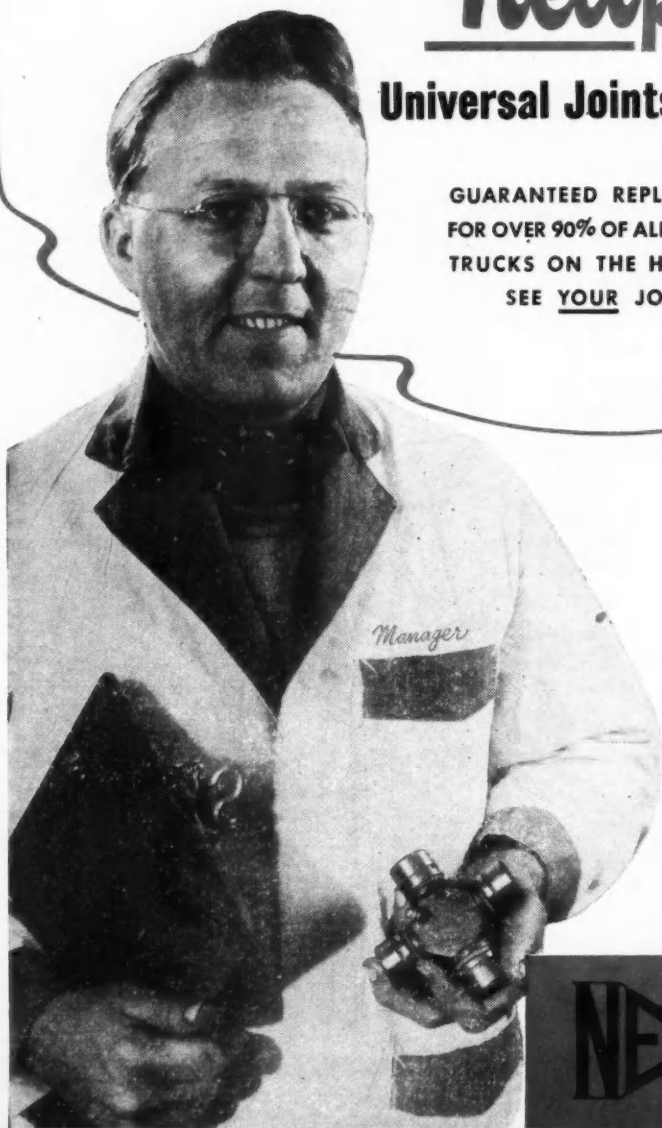
"The reduction in wear rate referred to above is an average of general experience over many applications in a wide variety of engines under widely varying operating conditions. This test data was obtained in the laboratory by injecting small quantities of a standardized and highly abrasive type of test dust into a single cylinder test engine. The

(TURN TO PAGE 132, PLEASE)

We Install *Neapco*

Universal Joints & Parts

GUARANTEED REPLACEMENTS
FOR OVER 90% OF ALL CARS AND
TRUCKS ON THE HIGHWAYS.
SEE YOUR JOBBER



NEAPCO
TRADE MARK

NEW ENGLAND AUTO PRODUCTS CORP., POTTSTOWN, PENNA.

WHERE'S HOMER?



HOMER SAYS THIS IS THE
HIGHEST ROAD IN THE U.S.,
SO HE MUST BE IN ...

- | | |
|-------------------------------------|-------------------------------------|
| <input type="checkbox"/> CALIFORNIA | <input type="checkbox"/> MONTANA |
| <input type="checkbox"/> COLORADO | <input type="checkbox"/> WASHINGTON |

Answer on P. 132



For Better Brakes... Reline with CoMaX

BIG OR SMALL... Use

**Wagner
CoMaX**

FOR THEM ALL



There is no brake assignment too tough for Wagner CoMaX Brake Lining. This line of superior quality friction material provides *complete coverage* for all passenger car, truck, and bus requirements, and is unsurpassed for long-wearing qualities and quick, safe, smooth stops.

You have everything to gain, too, in procuring your *entire* requirements for brake lining from a single source by standardizing on Wagner CoMaX. Available in rolls, sets, blocks, slabs, and cut segments. Consult your nearest Wagner jobber, or write us.

Wagner Electric Corporation

6470 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.



LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • NoRoL
CoMaX BRAKE LINING • AIR BRAKES • TACHOGRAPHS
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

B47-1

Chrome-Plating

(CONTINUED FROM PAGE 130)

results agree remarkably well with general experience in spite of the fact that the test was of the accelerated laboratory type.

Reduces Wear Two Ways

"CHROMIUM plate acts in two ways to reduce wear. The chromium, being extremely hard itself, has high resistance to abrasion and

in the process of digesting abrasive material reduces the size and sharpness of the abrasive so that its cutting ability is lessened. The hard surface of the chromium plate also has less tendency to pick up or become loaded with abrasive itself which contributes to reduced cylinder wear.

"General experience has also indicated that chromium-plating the faces of piston rings adds considerably to their resistance to scuffing. Scuffing is the result of actual welding of the material of the ring face with the

material of the cylinder, and it well may be that the higher melting point of chromium (2900 deg. F.) as compared with that of gray iron (2200 deg. F.) is a contributing factor. The lower coefficient of friction of chromium is probably also helpful.

"While we have produced both the solid type of chromium-plate as well as the porous type during the war, our standard design chromium-plated piston ring uses the solid type of plate exclusively. We believe that this feature contributes much to the superior performance of our rings. While the use of the solid type of chromium plate results in a higher quality piston ring, it imposes a considerable penalty on its manufacture. Radial pressure characteristics and general accuracy of the ring must be exceptionally good since such a ring has such an extremely low initial wear rate that it has little ability to "run-in" in the ordinary sense of the word. There is no soft surface to readily compensate for inherent inaccuracies of the ring. Although this feature represents a considerable complication of manufacture, we feel that it is quite worthwhile since it means that the effective chromium thickness is approximately 20 per cent greater than if a porous surface is used.

"Solid chromium plate differs from porous chromium plate only in the physical nature of the surface itself. The porous type of surface is obtained by following up the normal plating process with a short "deplating" cycle which erodes the surface for a depth of about .001."

Particular attention is called to the remarks regarding the justification of costs of this type ring. Attention is also called to the remarks concerning the wear of other parts of engines thus requiring them to be torn down before the rings are worn out.

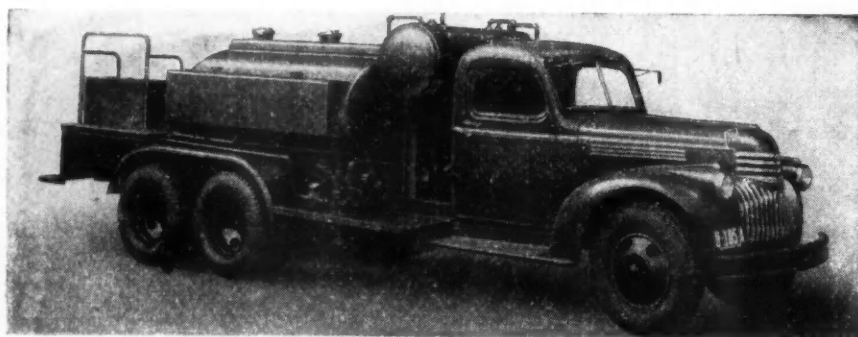
END

(Please resume your reading on P. 49)

● WHERE'S HOMER?

ANSWER... (To Question on P. 130)
Colorado. The highest automobile road in the U. S. is the Mount Evans Highway in Clear Creek County, Colorado. It rises to an altitude of 14,260 ft.

(Another Cartoon Quiz is on P. 134)



FLEET SERVICE TRUCK WITH FABCO DUAL DRIVE

On many construction jobs, in logging operations, and some agricultural applications—the Mountain must be brought to Mohammed—for most efficient operation. Better to bring "complete service" to the fleet of trucks and working equipment than to drive all of the units back to headquarters for servicing.

So here is the Fabco conception of a field service unit which has been accorded wide approval on the Pacific Coast. The main tank carries gasoline, Diesel fuel, and water. The blister tanks are filled with lubricating oils. An air compressor and air tank take care of tire inflation.

We would be glad to give you complete specifications and prices, and while you are about it, investigate Fabco Dual Drives, for you may need the extra power and traction to get to your operating fleet.

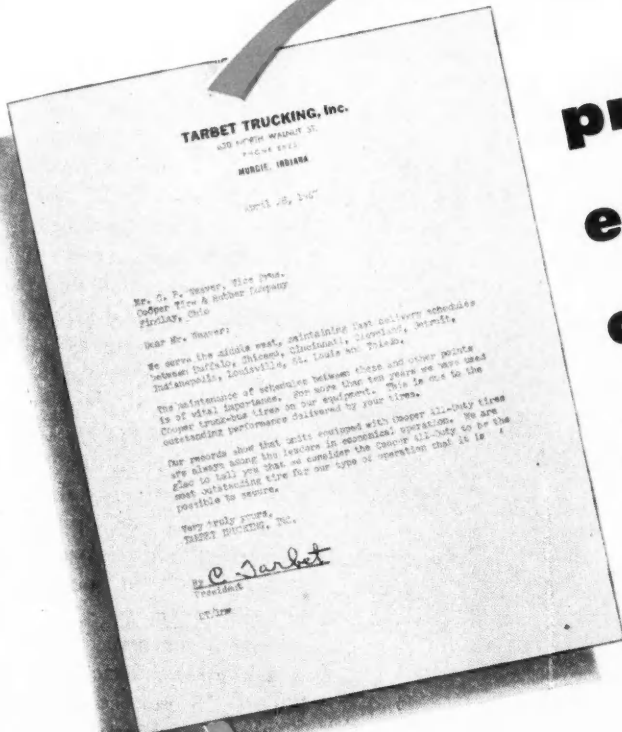


28 Years in this Business

F. A. B. MANUFACTURING CO.

1249 SIXTY-SEVENTH STREET - OAKLAND 8, CALIFORNIA

Dual Drives - 6 and 10 Wheel Units - Logging and Highway Trailers - Frame Extensions



profit by the experience of others

"For more than ten years we have used Cooper truck-bus tires on our equipment.

"Our records show that units equipped with Cooper All-Duty tires are always among the leaders in economical operation.

"... we consider the Cooper All-Duty to be the most outstanding tire for our type of operation that it is possible to secure."

Tarbet Trucking, Inc.
Muncie, Indiana

**Try cooler-running Coopers on
your toughest hauls.**

Match them against any other brand.

**Let your own records prove
that Coopers really make payloads
more profitable.**



DISTRIBUTED STRESS CONSTRUCTION is the important reason why tire dollars go farther when trucks roll on cooler-running Coopers. See your Cooper dealer and see him soon for complete details about DSC — how it works, how it protects against localized flexing and high friction heat.

Cooper Tire & Rubber Company

Factories at Findlay, Ohio

SEPTEMBER, 1947

Use postage-paid card inserted at page 65 for free information on advertised products

133

Rear View Mirrors

(CONTINUED FROM PAGE 61)

The question of plain vs. non-glare type appears to be controversial. Fifty-three per cent of the fleets surveyed preferred non-glare mirrors, while 44 per cent specified plain glass. Three fleets did not reply to this question.

Since the type of mounting may affect the life of the unit, fleets were asked to list their preference for

mounting of mirrors. Sixty-seven per cent of the fleets expressed a preference for a unit mounted in rubber and set into the backing plate, while 30 per cent stated that a direct mounting of the mirror in the metal frame would be satisfactory.

The painted type assembly received preference in 72 fleets, representing 66 per cent of the return. Twelve per cent, however, specified the chrome plated assembly. Twenty four others did not state any preference in the type of mounting.

Even with vibration a major cause of damage, over 61 per cent reported that they preferred only one bracket per unit. Twenty-six per cent were using two brackets for added support, while less than 6 per cent of the fleets used three and four brackets per mirror.

Since the method of mounting could account for life span, fleets were asked to list their method of mounting mirrors. Forty per cent preferred a screw attachment; 15 per cent favored a screw and/or clamp, and 22 per cent stated that a clamp attachment was desired. Five fleets mentioned welding as a better means of securing the unit—with and without the auxiliary clamp or screw.

The question of adjustment would appear to be controversial. Forty-four fleets, or 40 per cent of the total, preferred the hinge type mounting, while 63 per cent specified the ball and socket type.

Thirty-seven per cent of the 109 fleets attach mirror brackets to the door hinge; 26 per cent mounted theirs to the door hinge and/or the door frame and fender; 15 per cent mounted them to the cab door, while 22 per cent used the cab frame as a mounting base.

Fleet Men's Comments

POSSIBLY a quick glance at various remarks accompanying the returns will give an idea of fleet reaction to the type of mirrors now available as replacement accessories. Following are comments taken at random from the returns:

"We do not like stainless steel mirrors, and heavier brackets would help considerably."

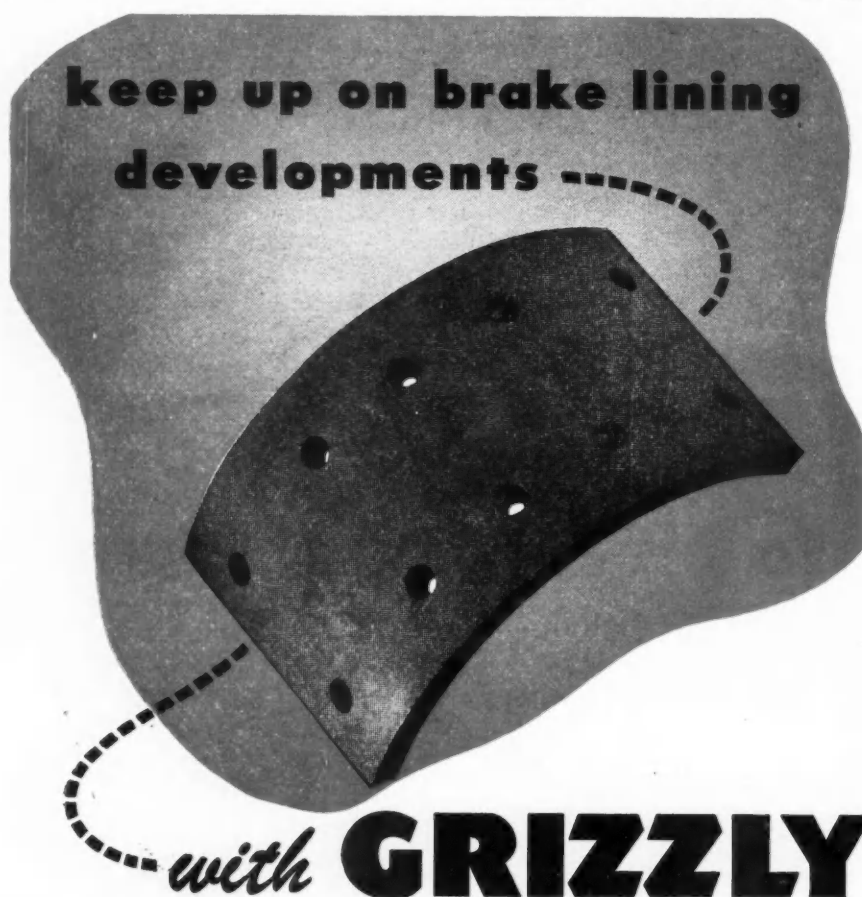
(TURN TO PAGE 138, PLEASE)

175,000 Fifth-Wheel



R. A. Bilton, Fruehauf plant manager, congratulates Frank Fields, a 25-year veteran with the company, on completion of the 175,000 fifth-wheel

keep up on brake lining developments



with **GRIZZLY**

Constant laboratory research backed up by 30 years experience in the manufacture of brake lining in both automotive and industrial fields keeps Grizzly constantly alert to developments resulting in finer brake lining. This same research and experience enables Grizzly to solve brake lining problems of widely divergent natures

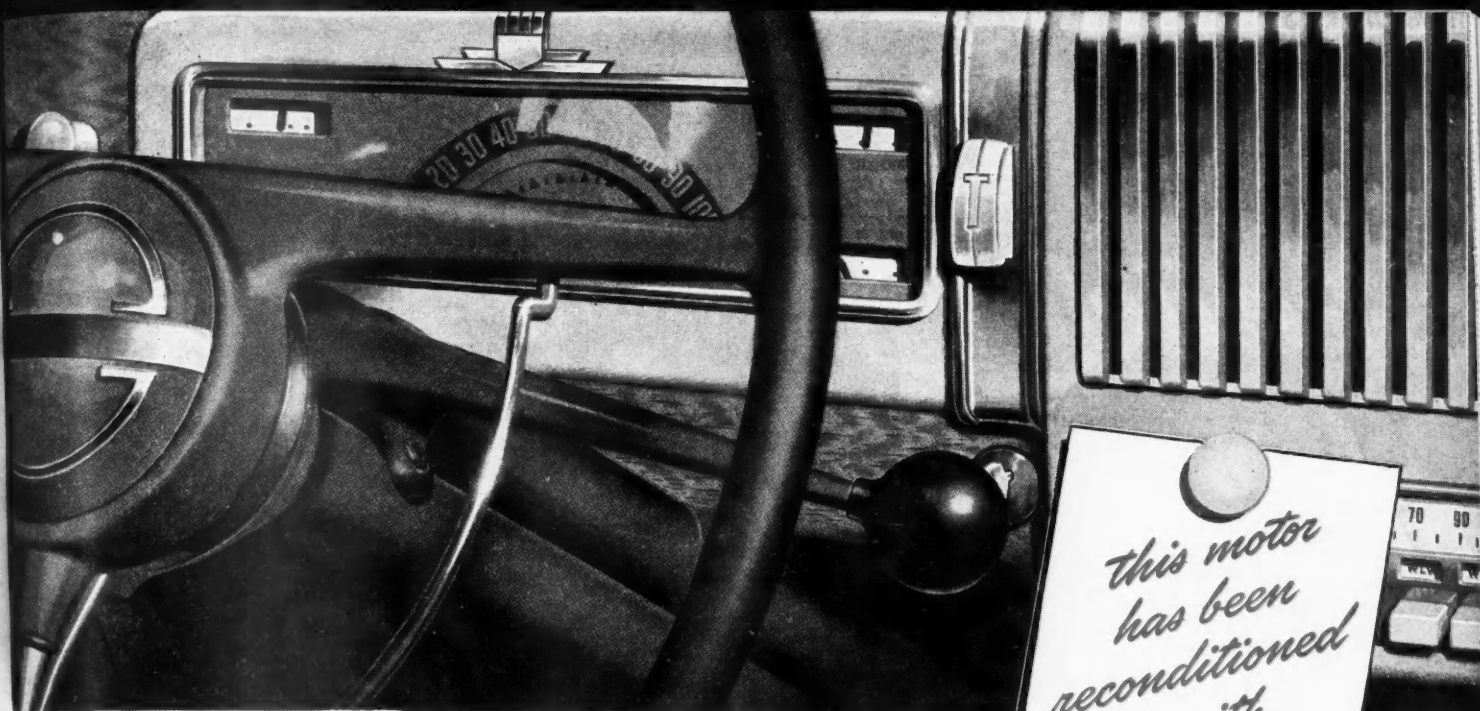
—helps keep Grizzly in its enviable position of one of the largest, most dependable producers of molded brake lining.

When you are confronted with a brake lining problem, follow the example set by other fleet operators and service managers—go to your nearest Grizzly Distributor or write Grizzly Manufacturing Company, Paulding, Ohio.



"Bear in Mind". . . ask for

GRIZZLY
BRAKE LINING



*this motor
has been
reconditioned
with*

**HASTINGS
STEEL-VENT
RINGS**

Everything's under control

**STEEL-VENTS Give You ...
Generous Wall Lubrication
... Always Under Control**

● Every time you open up an engine just think of all the lime and scale accumulated on the backs of those cylinders—to insulate them from the cooling water. Think too of the extra lubrication they'll need to offset this greater heat. And of the problem of controlling this oil.

Piston rings have to put a lot more oil on old cylinder walls—regardless of whether they're re-bored, resleeved or badly tapered; and then the rings must *control* the oil.

Hastings Steel-Vents deliver generous lubrication *all the way up* the cylinder walls. They control that oil through their wide, straight side openings and never-clog construction. That's why they keep on functioning at top efficiency, long after other types of rings are clogged or worn out.

Install a Steel-Vent motor engineered set, and rest easy. You'll get the most for your money—in long-lived efficiency, under *any* cylinder condition.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN
HASTINGS LTD., TORONTO

TOUGH BUT OH SO GENTLE



HASTINGS

STEEL-VENT PISTON RINGS

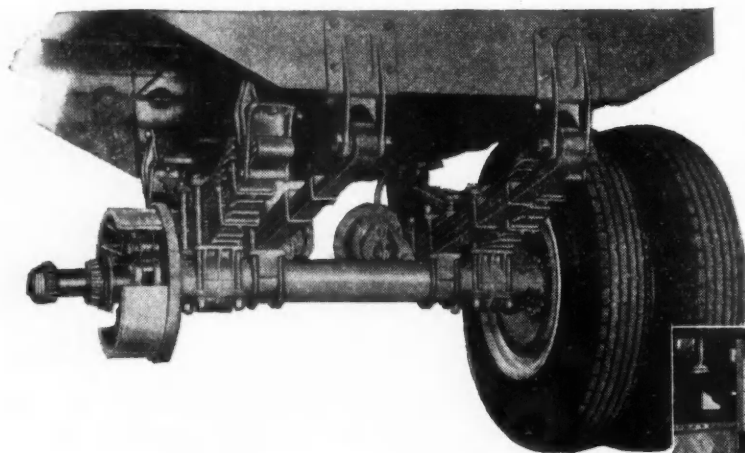
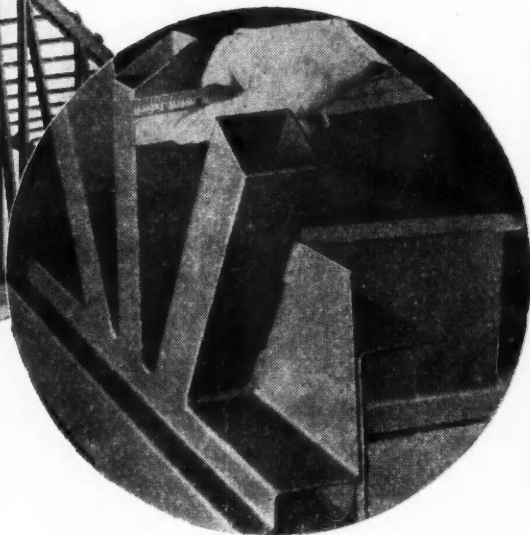
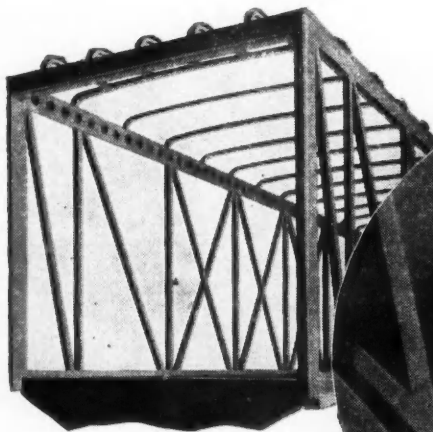
*Generous Wall Lubrication
Always Under Control*



GIVES YOU ALL

3

ADVANCED DESIGN—Bantam vans—built like a mighty bridge . . . truss construction . . . new, advanced design throughout.

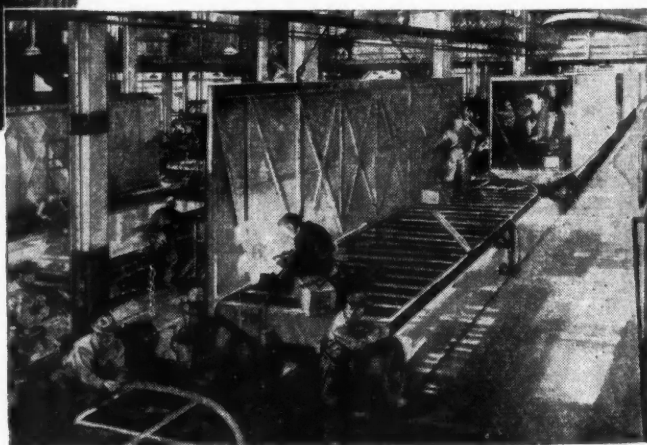


ENGINEERED CONSTRUCTION—from the ground up. Only on Bantam Trailers will you find *flexible* torque arms combined with free-floating, quadri-point spring suspension. Easy pulling . . . smooth braking . . . less driver fatigue.

2

PRODUCTION-LINE ECONOMY—In Bantam's big, modern plant, trailers are built by the economical, straight-production-line method . . . Quality trailers at low cost.

3



BUY BANTAM
GET ALL 3

NEW! "The Bantam Supercargo Tandem."—A new folder describing the Bantam Tandem Trailer line—the most advanced tandem trailers on the road today! Write for free copy.

AMERICAN BANTAM CAR COMPANY • BUTLER, PENNSYLVANIA

FOR MAXIMUM OPERATING ECONOMY

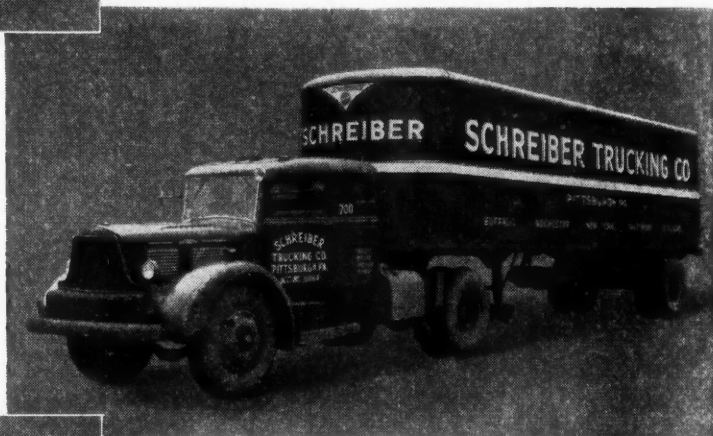


"We are more than pleased with the service our Bantams are rendering. Their performance is outstanding and they are the best designed trailers in our fleet."

WHITE STAR TRUCKING, INC.
H. Schindler, Jr.
Traffic Manager

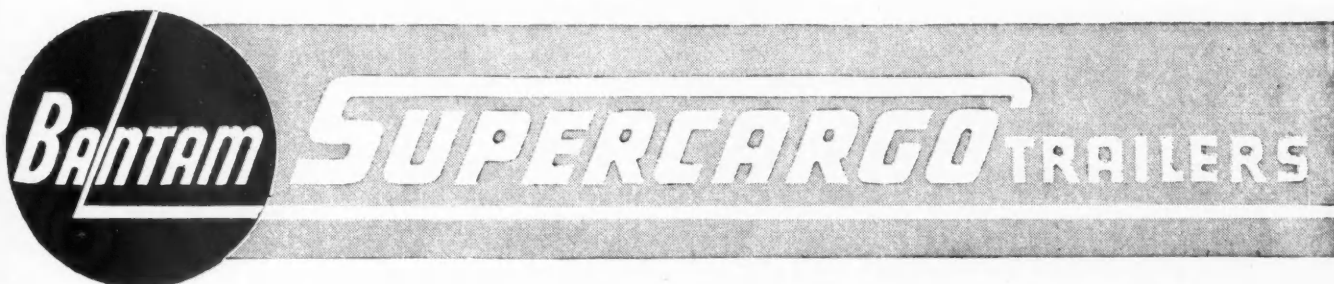
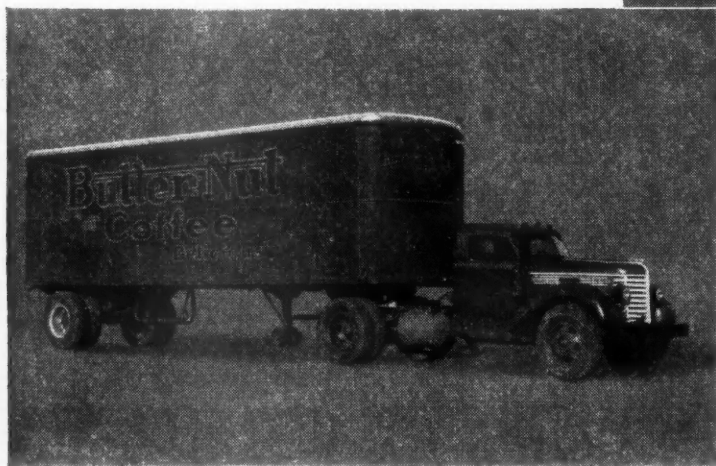
"... We now have eleven Supercargo trailers in operation. To make it short, I just wish to say that here's a trailer that's really engineered..."

SCHREIBER TRUCKING COMPANY
Samuel Schreiber



"... Not only do the units (Bantam Supercargos) handle heavy loads well, but it requires less pulling power than other trailers that we have used in the past."

PAXTON AND GALLAGHER
Paul Gallagher
President



Rear View Mirrors

(CONTINUED FROM PAGE 134)

"We think that the mirrors that are sold for replacement are made to a price rather than for a serviceable unit of the truck. Material is too light and of poor design."

"Mirrors should be made with more supporting brackets to eliminate vibration breakage."

"The present way of mounting mirrors is not very satisfactory.

When mounted on the cab door, bolts wear holes due to vibration. When mounted to door hinges, they need extra support."

"Most brackets are too weak for the length of extension necessary."

"We throw away too many mirrors that have rusted frames and discoloration of mirror. Regardless of what we pay, the frames and mirrors seem to be made of inferior quality."

"The clamp that fastens the bracket rod to hinge is not heavy enough. Vibration breaks bracket

off near door pin hole. A better made bracket would make a much better job."

"Hinge brackets are made too weak. They break with continuous adjusting. Drivers must pull mirror out of way when parking. Otherwise they get broken by other trucks."

"Brackets are not suitable or strong enough for the long extension required for rear vision. Support brackets are usually in the way and do not add to the appearance of the vehicle."

"Mirrors are generally cheap and therefore short-lived. Should be made to fasten to hinge and brace to door."

"Most mirrors do not provide enough vision. Would like to see the mirror built similar to a periscope which could be installed inside the cab."

"Cab door and hinge mountings are not practical because the majority of door checks break, allowing the door to open too far, thereby breaking the mirror."

"The clamp that fastens the bracket rod to hinge is not heavy enough. Vibration breaks bracket off near door pin hole. A better made bracket would make a much better job."

"Painted mirrors do not reflect other lights as much as chrome."

"We do not like stainless steel mirrors, and heavier brackets would help considerably."

"We use the round, ball and socket type because of economy, though they do not last long. The rough usage given them by our drivers would wear or damage a higher priced unit just as quickly."

"Ball and socket type mirrors are entirely unsatisfactory. A short time after installation the mirror head gets loose in the joint and flops around."

"Metal backs of mirrors break out at attachment and drop off due to vibration and old age."

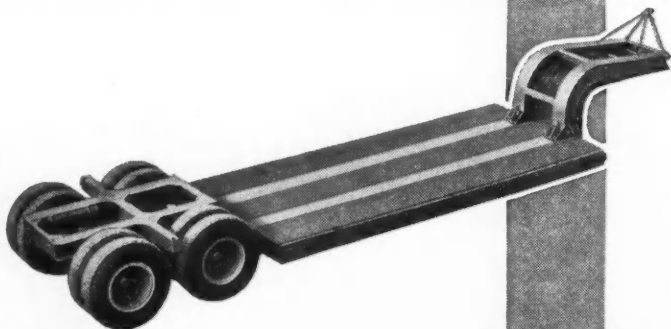
"Water getting into some spoils vision of mirror. Metal rusts so that the unit will not stay in place."

"All mirrors should have friction type joints."

END

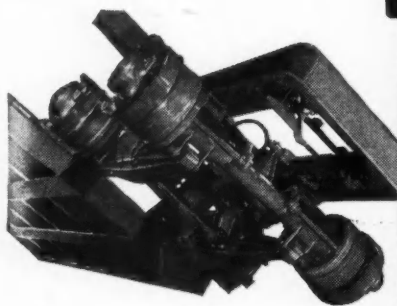
(Please resume your reading on P. 62)

...TRAILER BY TALBERT



...SUSPENSION BY

**HENDRICKSON
TANDEM**



Another example of the many types of special equipment that attests the varied application permitted by our proven design.

**HENDRICKSON
TANDEM**

HENDRICKSON MOTOR TRUCK CO.
CHICAGO 13, ILLINOIS

"Follow the Leader"



HE HAS TO TAKE CHANCES...

You
can play **SAFE!**

Take the risk out of ring jobs by installing American Hammered Piston Rings in every unit of your fleet! And be sure to take advantage of the fact that American Hammered Porous Chrome* rings are now available for 131 different bus and truck engines.

These amazing rings have been proved in millions of miles of the toughest kind of service. American Hammered Porous Chrome rings have set spectacular mileage records, delivering full efficiency during every record-breaking mile. They reduce cylinder wear by half . . . increase piston ring life four—even five—times. Ask your American Hammered jobber for Porous Chrome Rings. Koppers Company, Inc., Piston Ring Division, Box 626, Baltimore 3, Maryland.

*VAN DER HORST PROCESS

American Hammered Piston Rings



Cummins

Segregated Service

(CONTINUED FROM PAGE 41)

the three workmen here has his own portable workbench.

The body shop also has a frame straightening rack and wall racks for small metal parts. Moldings and steel channel sections are stored in racks on the outside wall of the shop. In the rear of the body department, an air compressor is set up for use in the general shop.

Next station in the garage line is in two parts, an employee locker and toilet section in front, and parts department in rear. Washroom facilities are standard, with the emphasis on convenience and cleanliness.

The parts department is centrally located, serving the body shop on one side and engine repair shop on the other. Small, fast moving parts, such as nuts, bolts, and air fittings, occupy the bins on the main floor. In addition, there are complete sets of taps, and dies, and drills ranging

from 1/16 to 1 in. A mezzanine holds additional stock, which is generally heavier engine parts on which turnover is not so rapid. A full time stockroom man runs his department on an immediate replacement basis. Our complete stock and parts inventory, including new engine units, but excluding tires, is kept at a \$30,000 level.

Our tire stock gets very special care. We had a basement storage room built under the parts department expressly for our rubber inventory. The room is cement floored and walled, dark, and cool. New tires are cured here for about six months, and then taken up through a floor well as needed. This special tire storage room is the only part of the garage equipped with an overhead sprinkler system. And well it might be, for our normal tire inventory is valued at between \$7,500 to \$10,000.

Repair Shops Interrelated

THE next garage station is the engine repair shop (Fig. 7) behind which are a superintendent's office and an electrical shop. The repair shop is equipped to completely rebuild a motor. Valve facers, lathes, and a 60-ton hydraulic press are used in addition to a full complement of motor repair shop tools. Two men do all the motor, transmission, and rear end work. A motor change can be accomplished in three to four hours. When a transmission, brown-lipe. clutch or motor unit has been rebuilt, the overhead rail and hoist comes into play to lift the part and place it in a storage rack. When a rebuilt component is needed, the hoist again lifts it from the storage rack, and puts it in position for assembly. All completed motors are test run on a portable test block outside the repair shop entrance (Fig. 8).

The electrical shop is small but complete. Tune-up, testing, and repair equipment and machines are all available for the one electrical expert. In addition to his duties on electrical equipment, he runs the vehicles through the dynamometer test.

The general repair shop area is the last station in the garage line. This is the largest section of the garage, and has two pits and a centrally located hydraulic lift similar

(TURN TO PAGE 142, PLEASE)

FEELS Right • FITS Right • WORKS Right!

Herbrand
VAN CHROME

SOCKET WRENCH SET

★ GREATER HANDLING EFFICIENCY

Fits the hand perfectly . . . engineered precision balance . . . lightweight comfort adds skill to the hand.

★ STRONG THIN-WALLED SOCKETS

Unnecessary weight and clumsiness eliminated . . . 12-point heat pierced Triple Alloy Steel, heat treated for greater strength.

★ VERSATILE HANDLE ATTACHMENTS

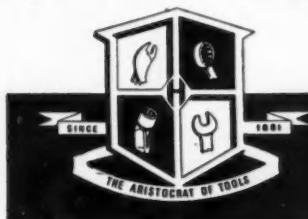
Meet all needs of most mechanics . . . heat treated steel for lifetime durability . . . lock tight to sockets . . . handsome finish.

SET No. SA-72½ INCLUDES:

10 sizes Hot Pierced Sockets, Reversible Ratchet, Speed Handle, Sliding T Handle, 5" Extension, 10" Extension, and Universal Joint. In Metal Box with ample room for additional Sockets and Handles. Refer to Herbrand Catalog No. 53 for other Wrench Sets.



See your Herbrand
jobber for details!



THE HERBRAND CORP.
FREMONT, OHIO



PATCHWORK PETE

YEAH, THEM
PISTON PINS SURE
LOOK SHINY AND
PURTY, BUT WHO
CARES WHUT THEY
LOOK LIKE WUNST
THEY'RE IN THE
ENGINE?



PETE GOT WRONG IDEA. TP
PISTON PINS CHROME-PLATED
TO GIVE 'UM TOUGH SKIN
—MAKE 'UM WEAR
LONGER—FIT BETTER.



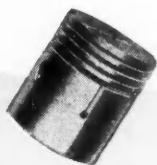
PEE-WEE

"TOUGH SKIN" IS RIGHT, PEE-WEE!
Chromium plating is an exclusive feature of Thompson Piston Pins—gives them a near diamond-hard surface for 100% to 200% increased wear resistance.

This super-hard chrome surface is non-corrosive, too. It stays smooth, free from blackening and pitting by engine acids which often cause ordinary pins to wear rapidly.

Like other Thompson Parts, TP Chrome-Plated Piston Pins are precision finished—held to .0001" tolerance and supplied in perfectly matched sets for exact fits and easy installation.

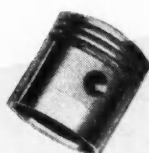
THOMPSON PISTONS—Companion parts to Thompson Chrome-Plated Piston Pins.



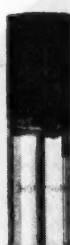
THOMPSON STEEL-BELTED PISTONS—Positive controlled expansion under engine heat.



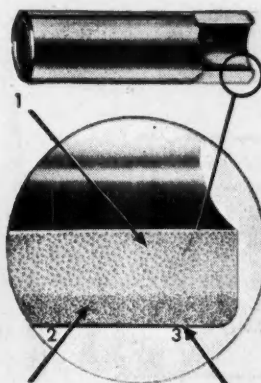
THOMPSON ALLOY PISTONS—Special aluminum alloy, extra strong construction for heavy-duty service.



THOMPSON CAST-IRON PISTONS—Duplicates of the original equipment pistons used in many cars, trucks, buses and tractors.



CHROMIUM-PLATING PREVENTS CORROSION These three piston pins were chromium-plated for only half their length, then exposed to oxidation. Note how chrome surface stays smooth and shiny—free from blackening and pitting.



CROSS-SECTION VIEW OF THOMPSON CHROME-PLATED PISTON PIN Showing:
(1) Tough inner core for maximum strength;
(2) Deep case-hardening, carefully lapped;
(3) Super-hard chromium-plated surface.

See Your

Thompson



Products

Distributor

Cleveland • Detroit • Los Angeles • St. Catharines, Canada

Segregated Service

(CONTINUED FROM PAGE 140)

to the one at the wash building. Rapid change is stressed in this department. The two overhead rails are placed so that hoists can service every point in the area. The main floor is kept as free as possible of any equipment. The two pits are equipped with drainage facilities to a 1000-gal sump tank. Lights in the pit are recessed in the walls and are

explosion proof fixtures. Six general repair men work in this section.

Completely repaired vehicles all stop at the last station of the "assembly line," the dynamometer testing point located outside the garage, next to the general repair section. Each unit is road tested with the load factor applied. Horsepower output, speedometer, and oil pressure are all checked to assure that the equipment is ready for the road.

When the garage superintendent gives the final OK, the vehicle moves

to the parking area just beyond the garage. The dispatcher is notified that the truck is ready for duty.

Last Stop: Fuel Island

THE fuel island is in the center of the service yard, between the garage side of the plot and the scale, wash building, and grease building side of the "production line." This location has the advantage of plenty of approach space for large rigs. The concrete island has a double installation for simultaneous service of front and rear. A canopy covers the island for protection against the elements, and the pumps are painted a fire engine red to make them conspicuous. There are two 10,000-gal underground tanks, one each for gasoline and diesel fuel. Dispensing is by electric pumps, with all hoses on automatic rewind spindles. And, of course, water and air facilities are installed.

When one of our rigs rolls out of the gate on an assignment, the driver has full confidence that his equipment will perform well. The production line system leaves no room for guesswork, and pays a bonus in better driver morale. Both driver and equipment become a credit to Lyon.

END

(Please resume your reading on P. 42)

ATA OPPOSES TRUCK BUREAU

A proposed bureau to be set up within the ICC for the purpose of directing distribution of for-hire motor carriers to different areas to meet seasonal demands has found few takers. Testifying before a subcommittee of the House Interstate Commerce Committee, Roland Rice of ATA pointed out that unlike railroads, trucks were not standardized, that most motor carriers were small organizations with few vehicles in reserve, and that the shifting of even a small number of vehicles would seriously disrupt existing services.

Reynolds Body



A typical installation of Reynolds aluminum van body. Shipped knocked-down and assembled from standard parts the bodies are variable in height, width and length and are available with a wide variety of wheel well, door and trim combinations

5 REASONS WHY IT PAYS TO REPLACE WITH genuine Johnson TAPPETS

Finest steel heat treated for maximum strength and hardness.

Holes for spanner which keeps tappet from turning when adjustment is being made.

JOHNSON Self-Locking Screw maintains accurate adjustments.

Body of special quality iron for strength and lightness.

Hard chilled face for long wear.

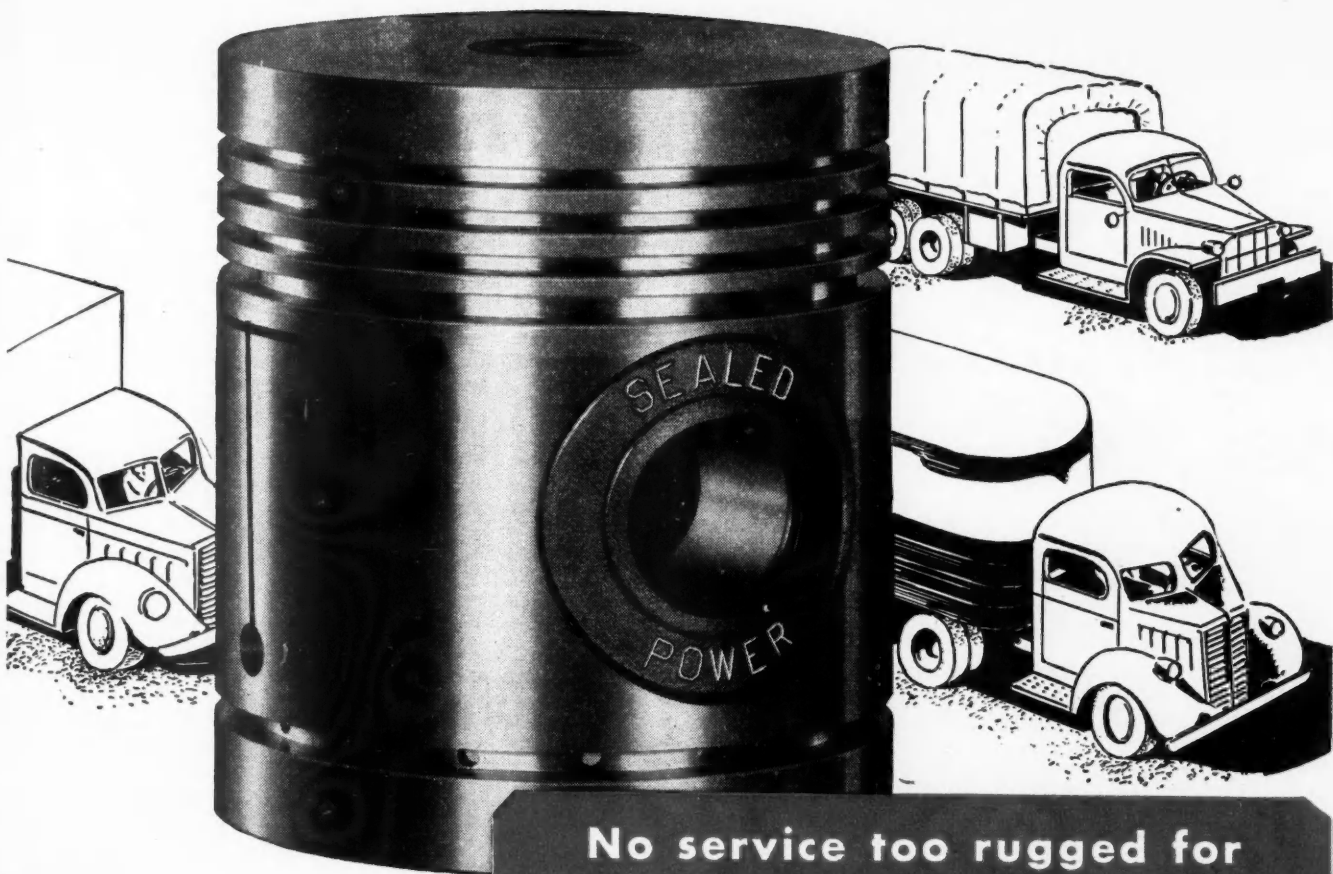
Yes, and there's profit in replacement with JOHNSON Tappets! For Ford and Mercury V-8's it's the JOHNSON Adjustable Tappet (shown above). . . . For other popular makes of cars and trucks Genuine JOHNSON Replacement Tappets are also available.

DISTRIBUTED TO N. A. P. A. JOBBERS
By BALKAMP, Inc. of Indianapolis
CALL YOUR N. A. P. A. JOBBER TODAY

Johnson

PRODUCTS INC.
MUSKEGON, MICHIGAN

"Tappets Are Our Business"



No service too rugged for
SEALED POWER
 HEAVY DUTY
PISTONS

RUGGED INTERNAL CONSTRUCTION assures long life in heavy duty service, with extra metal added for correct heat transfer and extra strength.

FINEST ALUMINUM ALLOY #132 is used exclusively in Sealed Power Heavy Duty Pistons.

CAM GRINDING assures correct shape and increased bearing area at operating temperatures.

T-SLOT DESIGN assures lower and more uniform temperature throughout piston.

Keep your War Bonds!
 Get \$4 for \$3!



IT WILL PAY YOU TO SPECIFY

SEALED POWER HEAVY DUTY PISTONS

SEALED POWER CORPORATION

MUSKEGON, MICHIGAN • STRATFORD, ONTARIO

Inter-Regional Highway

(CONTINUED FROM PAGE 76)

sirable. Traffic lanes 12 ft. wide are recommended on all heavily traveled routes. Where traffic density exceeds 3000 vehicles in peak hours, elimination of all cross traffic at grade is advocated.

Rural sections of the interstate system comprise only 1.1 per cent of all rural roads, but carry 20 per cent of

all rural traffic. The system reaches 42 state capital cities and will serve directly 182 of the 199 cities in the country having a population of 50,000 or more. Average traffic on routes comprising the system, exclusive of urban sections, was 2693 vehicles per day in 1941 as compared with 1439 on the Federal-aid system, 972 on state highways and 155 on all rural roads.

In many large cities depressed or elevated expressways will be built, making possible city travel at an

average speed of 35 to 45 miles an hour, without stops for traffic signals and free of interference by cross traffic. Depressed portions of expressways will be supplemented by parallel frontage roads for local traffic, and bridges will be constructed at intersections to serve cross traffic. The urban expressways will be integral parts of the national interstate system.

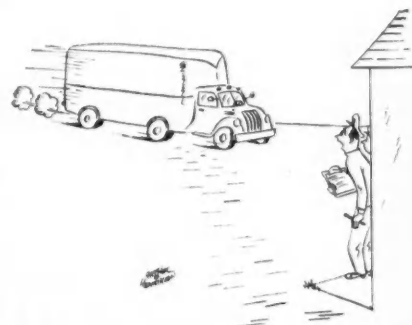
The Federal-aid Highway act of 1944 authorized \$500,000,000 in each of the three fiscal years following the war to assist the states in developing a three billion dollar highway program which would include improvements on the regular Federal-aid system, on highways in urban areas where the population is 5000 or more, and on a Federal-aid system of secondary or farm-to-market roads in each state.

The sum of \$225,000,000 was set aside from the authorized annual appropriation for improvements on highways in the regular Federal-aid systems; \$125,000,000 was made available for urban sections of the system only, including expressways, circumferential and distribution routes; and \$150,000,000 was earmarked for state systems of secondary roads.

No specific sum was provided for development of the national interstate system. However, since it is made a part of the Federal-aid system, the amounts provided for this project are available for the interstate system. The appropriations authorized have already been apportioned among the states. In most states half of the cost of Federal-aid projects and up to one third of the cost of right-of-way may be financed by the Federal government.

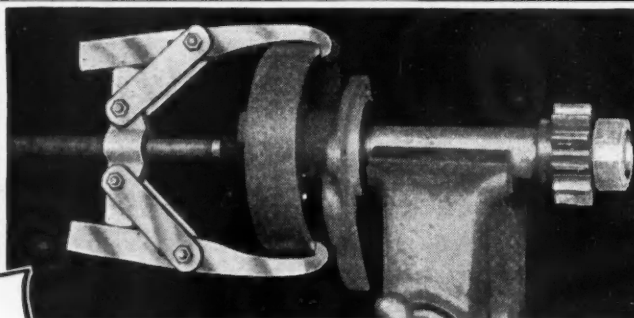
END

(Please resume your reading on P. 80)



"Joe's in trouble! Here comes his truck."

IN *Truck* MAINTENANCE



Helps to GET JOBS DONE QUICKLY, SAFELY

Saves hours of time and hard work, and avoids parts breakage, in removing and replacing bearings, races, pinions, collars, snap rings, gears, sleeves, hubs, wheels, shafts and other close-fitting parts—including many tough jobs that no other tools can handle. OTC is the only COMPLETE line of Pullers, Attachments and Special Tools. APPROVED by all leading bearing manufacturers.

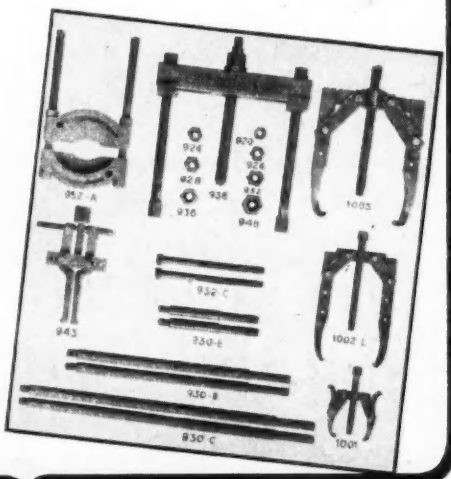
OTC No. PE-12 SET pays Big Dividends in any fleet maintenance shop. Handles wide range of work on trucks, busses, tractors, etc.—with minimum investment. Includes OTC GRIPOMATIC Pullers, PUSH-PULLER, Puller Attachments, Extension Legs. Handy, sturdy Service Board optional.



ASK YOUR JOBBER OR WRITE FOR OTC CATALOG

a helpful guide to more efficient maintenance; shows many applications of OTC TOOLS in repair and overhauling jobs.

OWATONNA TOOL COMPANY
335 Cedar St., Owatonna, Minn.



Bonded Lining

(CONTINUED FROM PAGE 36)

automobile and truck producers. When Detroit makes up its mind, it's a foregone conclusion that bonding equipment for the replacement market will be ready.

Most of the big lining manufacturers now offer undrilled lining sets in popular sizes for bonded application. Surely the supply is adequate, and the changes necessary are so simple that future needs can be met without difficulty. Raybestos-Manhattan, Inc., was reputedly the first to offer undrilled sets for use with bonding equipment while to Grizzly Mfg. Co. goes credit for the first commercially available undrilled lining set with the adhesive already applied at the factory. With these, the user needs neither strip nor liquid adhesive, but merely clamps the lining on the shoe and bakes them.

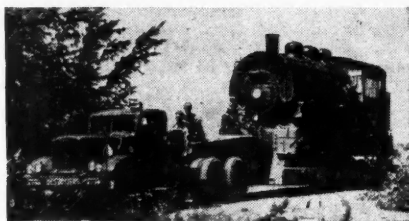
Future Forecast

TO attempt an out-and-out forecast of the future of bonded linings would be little short of foolhardy. But again there are a few facts that should be recorded in conclusion. First is the fact that oven manufacturers have sold and are selling as many ovens as can be produced. There is a tremendous demand for them. It goes without saying that jobbers and brake specialists who use the process are completely sold on its advantages, but more importantly, the fleetmen we have talked to also like the process, back up the claims that mileage is increased by just about 100 per cent. One fleetman who has been using the process for 18 months said he was completely unable to discuss troubles—there simply were none.

As mentioned at the outset, at least one large truck manufacturer is already offering the bonded shoe on an exchange basis. And at least one manufacturer of brake lining is working his experimental ovens on a full-time production basis building up a stock of bonded shoes. It is a good bet, considering the cost of the bonding equipment, that many fleetmen will find it more and more profitable to swap in their old shoes for new ones on either an exchange or even a throw-away basis.

END

(Please resume your reading on P. 37)



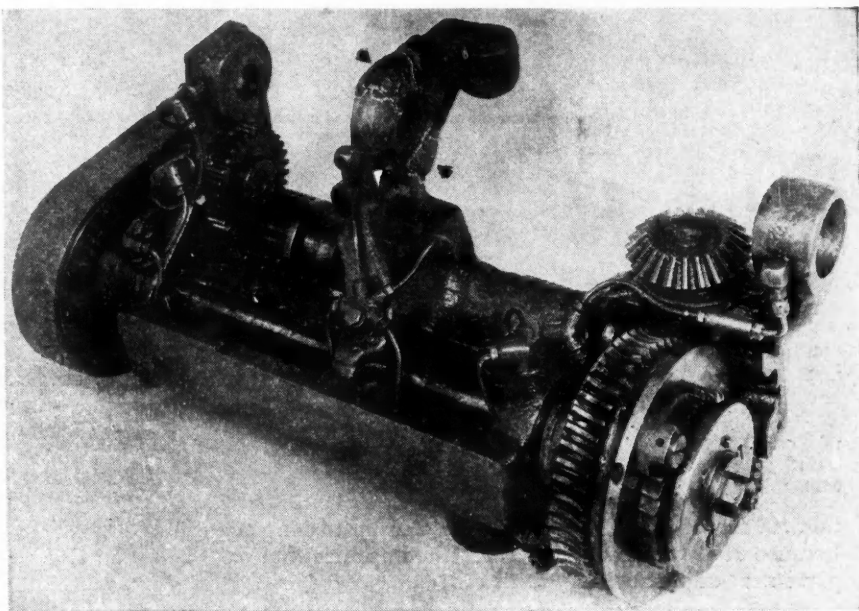
Trucks have moved locomotives before but this job involved the whole railroad—rails, switches, engines, caboose. Desrosier Cartage, Inc., Montreal, made the 35-mile haul with the help of an Autocar diesel and a 60-ton low-bed semi-trailer

9000 TANK TRUCKS READY

Some 1500 common and contract carriers have placed their 9000 over-the-road tank trucks at the disposal of the oil industry on a 24-hour-a-day basis to ease the nation over the expected oil shortage. It was recalled that during the war truck operations on all hauls of less than 200 miles released 20,000 rail tank cars for long hauls.

TIRE INVENTORIES UP

Shipments of truck and bus tire casings during May were off 1.44 per cent from the April figure while production was off 2.7 per cent. Inventories, on the other hand, increased by 14.78 per cent.



THIS CLUTCH WAS ARC WELDED WITH ALL PARTS IN PLACE using COPPER-ARC Electrode

COPPER-ARC Electrode has been used successfully for arc welding repairs on gray iron castings since 1929. The repair illustrated was made in a minimum of time because, due to the localized application of heat, it was not necessary to take the assembly apart or to pre-heat the casting. The clutch was out of service only ninety minutes. Many of your cast iron truck and trailer parts can be repaired in place with this electrode. We have other electrodes for other types of cast iron repairs. It will pay you to stock all of them and take advantage of the fast, economical arc welding process for all of your cast iron repair work.

RECOMMENDED ELECTRODES FOR ARC WELDING CAST IRON PHILLIPS "600"

For building up worn, damaged or defective areas where the deposit must be strong, fully machinable and of the same color as cast iron.

COPPER-ARC

For repairs on broken castings where high strength is important but machinability and color match are not essential.

NICO

For repairing cracked cylinder blocks, filling cavities and other repairs where good color match is desirable but full machinability is not essential.



C. E. PHILLIPS & COMPANY

2750 Poplar Street
Detroit 8, Michigan

1145 East 76th Street
Chicago 19, Illinois

MANUFACTURERS AND DISTRIBUTORS OF WELDING ELECTRODES AND SPECIALTIES

Our nearest distributor will be glad to assist you further in selecting the electrodes best suited to your work.

Tachometers

(CONTINUED FROM PAGE 72)

and approximately 20,000 engine miles.

The recording tachometer is a distinct aid to the driver while on the road. It does not replace the speedometer, but shows the correct speed at which the engine must be kept, regardless of the gear in use. Our tachometers, incidentally, are electrically illuminated for night driving.

Also, through the use of this device, the driver is able to set his engine speeds while he is winching a load onto the truck or trailer. Average engine speed for a winching job is 750 rpm. Smaller rigs pull at the rate of 21 feet per minute, and larger ones at 15 feet per minute. The tachometer regulates safe loading speeds by designating the engine's most efficient point of operation under varying loading speeds.

Driver psychology is another factor on which the engine mile record-

ing tachometer has a direct bearing. A driver who is given the proper tools will usually produce better results. If he knows his tool will easily control his truck's operation with greater safety and economy, his morale is boosted considerably. He knows, too, that there is an active interest in him on the part of management.

Three Service Forms

THREE forms are used in our system of servicing trucks on a motor mile recording tachometer basis. Each form is simple and easy to maintain. The first is the "Daily Fuel and Oil Consumption Form." This is simply a sheet of paper in a stenographer's notebook ruled off for the following headings: Unit Number; Gas; Oil, Tachometer Reading; Speedometer Reading. The top of the sheet is marked with the date, for a fresh sheet is used every day. "Daily Fuel and Oil Consumption Forms" are accumulated for a year, after which time gas, oil, tachometer and speedometer readings are each totaled for the historical record of the year's activities.

At the end of every day, each unit passes through the gasoline island where fuel and engine oil are added as required and tires are checked for pressure, cuts, misalignment, etc. The "Daily Fuel and Oil Consumption Form" is kept at the island, and appropriate entries are made as each vehicle passes through. At the end of the day, this form is passed on to the fleet maintenance superintendent, who keeps the files of the other two forms used in the system, the "2000 Mile Inspection Form" and the "Lubrication Record."

The "2000 Mile Inspection Form" (Fig. 3), an 8½ in. x 13 in. mimeographed sheet, has a heading for the truck number, make, model, tachometer reading, speedometer reading, and date. The main part of the sheet is divided into four columns. The first column lists the routine items to be checked; the second is for a check mark if the item is OK and an "X" if not satisfactory; the third column provides space for remarks on any defects noted; and in the last column the date of correction is to be entered. A small bottom section is devoted to general conditions where

(TURN TO PAGE 150, PLEASE)

4 POINTS

that lead to
LONG CANVAS WEAR

Ready for the long, hard life of extra duty is Flamefoil Canvas, a fabric treated by a patented* process that gives canvas 4 POINT PROTECTION and leads to extra safety and substantial savings in replacement costs of canvas equipment.

No. 1 is FLAMEPROOFING

A spark, a lighted match, a cigarette butt... they do not start Flamefoil Canvas blazing because it is protected by a patented* finish that gives the "cold shoulder" to flame.



No. 2 is MILDEWPROOFING

Mildew is a destroyer that is checked by Flamefoil Canvas finish. This process successfully takes the rotting "bite" out of mildew, to protect canvas equipment in storage.



No. 3 is WEATHER RESISTANCE

The extremes of weather are no problem to Flamefoil Canvas. It is treated to "weather" all weather.



No. 4 is WATER REPELLENT

Drenching rains do not affect the protection of Flamefoil Canvas. It sheds water like a "duck's back".



Next time you buy be sure to specify Flamefoil Canvas for all your equipment. It's safer... it's more economical. See your canvas goods jobber or write direct.

*Manufactured under Patents Nos. 2,044,176 and 2,299,612. Others Pending.



FLAMEFOIL
PRODUCTS

PHILADELPHIA TEXTILE FINISHERS
INCORPORATED
NORRISTOWN PENNSYLVANIA

Makers of: Flamefoil Canvas • Flamefoil Fabrix • Flamefoil Beauvan
and Flamecote Canvas Finish



Photograph Courtesy of Boyertown Auto Body Works, Inc.

"TOPS" in Body Appearance, Utility and Economy

The illustrated Mobile Television Unit is a typical example of Boyertown Auto Body Work's designing and custom building of truck bodies for specific needs using Parish Universal Body Sections.

This was made possible because of PARISH'S exclusive, complete line of prefabricated, high-tensile

steel body sections which contain all the engineering features developed at PARISH since they first pioneered in Universal Body Sections. It is no accident that PARISH has the largest and most complete setup of tools and equipment for the production of truck and trailer frames and body sections.

Hundreds of body builders are using P A R I S H Body Sections because of the following features they make possible in truck and trailer bodies:

- Individual Design
- Attractive Appearance
- Simplified Layout
- Quicker Delivery
- Strength Without Excess Weight
- Easy Maintenance



When you need a new or special body or are replacing or adding new trucks or trailers to your fleet, be sure to specify P A R I S H Universal Body Sections and P A R I S H Pressed Steel Heat-treated Frames. Rely on the P A R I S H "know-how" developed through years of experience. Catalogs A and B will be sent upon request to Body Manufacturers.

Pressed Steel Heat-Treated Frames for Automobiles, Trucks, Tractors and Trailers, and Universal Body Sections

PARISH PRESSED STEEL CO. Subsidiary of DANA CORP.
READING, PA.

Western Representative: F. Somers Peterson, 57 California St., San Francisco, Cal.

2000 Mile Inspection			
Truck No.	Make	Model	Date
24	GMC	ASK 522	19 JUNE 1947
TACHOMETER READING		4853	
Speedometer Reading		20,514	

Routine Items	✓ if O K X if no good	REMARKS Defects Noted	Date of Correction
Lubricate according to manufacturers recommendations.	✓		
Check crankcase oil level.	✓		
Check differential and transmission lubricant level. Examine for leaks.	✓		
Fill radiator with water. Check anti-freeze if necessary. Tighten all hose connections.	✓		
Check distributor points. Clean and adjust if necessary. (See manufacturer's manual for spacing.)	✓		
Clean and adjust spark plugs. (See manufacturer's manual for spacing.)			
Check ignition timing and oil distributor wick and fill distributor grease cup.			
Adjust fan and compressor belts. Replace belts when necessary.			
Tighten water-pump gland nut. Replace pump packings when necessary.			
Clean fuel-pump strainer, bowl, and carburetor strainer.			
Adjust carburetor (with vacuum gauge if possible.)			
Inspect for gas, oil, or water leaks, examine with engine hot and running.			
Take hydrometer reading of all battery cells. Add distilled water when necessary.			
Adjust clutch pedal for clearance and travel. Check hand brake connections, and travel.			
Check oil pressure and ammeter charging rate.			
Check all other instruments.			
Check steering wheel for play.			
Inspect universal joints for looseness.			
Tighten brake connections and check brake-pedal travel, drain water from air or vacuum tanks, check master cylinder fluid level (hydraulic).			
Inspect radius rods.			
Test all lights, check reflectors.			
Tighten all wheel nuts.			
Inflate tires and spare. Check front wheel toe-in. Adjust if necessary. Check tires for cuts or bruises. Repair immediately.			
Check tractor-trailer brake and light connections.			
Check tractor-trailer fifth wheel.			
Road test truck.			
Flares.			

GENERAL CONDITIONS

Lubrication ☒

Appearance GOOD, WELL PAINTED

Tools & Equipment APPARENT GOOD

REMARKS: Right outside door

Fig. 3. The 2000-Mile Inspection Form

notations are made on appearance, tools and equipment, and a check mark made after "Lubrication" when the lube job has been completed.

Vehicles are checked every 2000 engine miles and the "2000 Mile Inspection Form" gives the clue for inspection periods. The maintenance superintendent keeps one of these forms for each vehicle. The form's tachometer reading notation shows the engine mileage at which the last inspection was made. At the conclusion of a new 2000 mile check, the

old maintenance form is destroyed.

When the first form, the "Daily Fuel and Oil Consumption Form," is brought in at the end of the day, the tachometer readings on it are checked against the reading on the individual "2000 Mile Inspection Forms" which show the figure at which the last inspection was made.

Thus, an entry on the "Daily Fuel and Oil Consumption Form" may show a tachometer reading of 20,807 miles. When a check is made at the end of the day against that vehicle's

New CORROSION-PROOF FEATURES IN K-D Armored Clearance Marker Lamp



"2000 Mile Inspection Form" and the form shows last service at a reading of 18,807, then the superintendent knows it is time to tag the vehicle for an inspection. Difference of a few miles more or less than 2000 is, of course, unavoidable. The superintendent brings the vehicle in by first checking on its whereabouts with the dispatcher, and then instructing the yardman to pull it in when it returns to the garage.

The third form, the "Lubrication Record" (Fig. 4), is also checked

LUBRICATION RECORD																						
		TACHOMETER		Truck	HASE INTERNATIONAL																	
DATE	Reading	Number	Oil Changed	Oil Filter Chg.	Wash & Hoist	Chassis	Rear axle diff.	Transmission	Steering Gear	Centerline	Shaft U-Joint	Wheel Bearings	Spring	Master Cylinder	Shock Absorbers	Door Locks, Etc.	Fire Extinguisher	Water Pump	Engine Accessories	Air Cleaner	Generator	Starter
1947																						
21 APRIL	123,610	1	✓	NO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6 MAY	125,610		✓	NO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15 MAY	127,520		✓	NO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17 JUNE	129,760		✓	YES	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Fig. 4. The Lubrication Record, contains data based on the tachometer reading

against the "Daily Fuel and Oil Consumption Form" at the end of the day. The tachometer reading is again used as the control. The superintendent keeps an individual lube record form for each vehicle. The form, an 8½ in. x 13 in. mimeographed sheet, has columns for the date of the lubrication, the tachometer reading at time of lubrication, the truck number, and a series of 23 separate items to be gone over at the time of lubrication. This lube form is kept for a year on each vehicle.

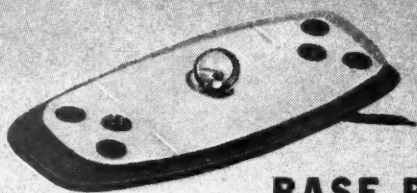
The tachometer reading on the "Lubrication Record," when matched with the tachometer reading on the "Daily Fuel and Oil Consumption Form," will quickly show whether the 2000 mile mark is near and another lube is required. On the lube record, under the column, "Oil Changed," a check mark is made to indicate that this received attention, and the letter N is added to show new oil and R to indicate renewed oil. In the next column, "Oil Filter Change," Yes or No is noted. As Fig. 3 indicates, the oil filter is changed every 4000 motor miles.

Augmenting the three PM forms are permanent historical and accounting records. The historical record for each vehicle shows the picture of the work done on that vehicle during its life. Details are given of both major and minor overhaul work. Entries are dated and referred to at frequent intervals, helping to determine when some particular overhaul work may have to be scheduled.

The accounting records, as well as the historical records, are kept principally for management. Accounting records include the figures on costs of operation and earnings for each truck and trailer tractor combination.

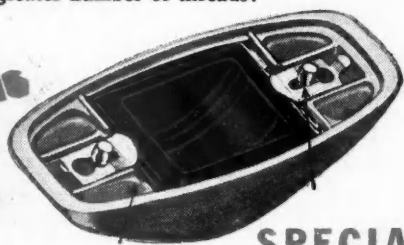
Maintenance Procedures

STRANGELY enough, our present lube procedure evolved out of experience we had some time ago in (TURN TO NEXT PAGE, PLEASE)



BASE PLATE LAMP SOCKET AND SCREWS NOW MADE OF BRASS!

Screws will not rust out! Screw threads will not rip out! Screws will not freeze up from rust! Lamp socket is corrosion proof. Entire base unit is now 100% rust-proof! What's more, the brass plate holds the screws as strongly as the old-type steel base plate, because the brass permits extrusion of the top hole in the plate to give a greater number of threads!



SPECIAL CLIPS FOR QUICKER, EASIER HANDLING!

Two special clips hold lens and screw in place while making bulb replacements. No more dropping of lens. No more hunting for lost screws. No more juggling of parts. Mechanics love it!

TOUGH ARMORED HOUSING AND "LIGHTHOUSE" LENS!

The tough malleable iron housing protects lamp and lens from glancing blows of tree branches, walls and other vehicles. The "Fresnel" type lens gives greater visibility. Anchored fibre gasket seals out dirt and moisture. Rubber pad between lamp and body absorbs vibration. Socket plate held in place by four screws assures positive ground.



Makers of the most complete line of automotive safety products

THE K-D LAMP DIVISION
NOMA ELECTRIC CORPORATION

1910 Elm Street

Cincinnati, Ohio



THE SMALL EXTINGUISHER.. WITH THE **MIGHTY PUNCH!**



FOR FIRE HAZARDS THAT DO NOT DEMAND
LARGER EQUIPMENT . . .

The new ANSUL 4 Dry Chemical Fire Extinguisher has fire stopping effectiveness far in excess of any other extinguisher of comparable size. Its compact size makes it ideal for locations where space is limited. The ANSUL 4 is easy to use... easy to recharge on-the-spot...and again ready to



STOP FIRE FASTER!

MADE BY THE MAKERS OF ANSUL-DUGAS DRY CHEMICAL FIRE EXTINGUISHERS, MODELS 20, 30, 150A AND 350A.

ANSUL CHEMICAL COMPANY

FIRE EXTINGUISHER DIVISION, MARINETTE, WISCONSIN

Tachometers

(CONTINUED FROM PAGE 151)

desert country. Over the mountain ranges from Los Angeles lies a fairly large hot, dry area. Desert operations with chain drive equipment showed that in order to keep shackles, steering linkage, drive lines, and drive chains on the equipment for any length of time, it was necessary to daily flush these lubrication points with oil. We used this desert experience in our metropolitan activities. Although daily flushings are not now necessary, we go over each part at the 2000 motor mile inspection. As a result of this lubrication system, in use for 15 years, we have not lost any steering bushings, bearings, ball and socket joints or shackles.

Greasing procedure in our shop is different from most because we lubricate with steam cylinder oil rather than with ordinary greases. A feature of our operation is the use of a single lubricant, SAE 140, as much as possible. We use this same SAE 140 on all exposed chassis parts as well as in gear boxes, transmissions, and differentials, applying it with standard pressure guns. This saves time, and cuts the amount of investment necessary in equipment and a stock of various types of greases. Of course, a few special oils and greases are necessary for such parts as electrical accessories, wheel bearings (on which we use a fiber grease), and water pumps. However, using the single lube whenever possible makes the grease man's job much easier.

The straight axle low bed trailers are of the conventional type commonly seen on the streets of any industrial community. However, these trailers have several modifications to meet particular problems. On all of the low trailers, a patented device, Fig. 1, automatically keeps the pull line for loading purposes always center of the trailer. This device also keeps the pull line center of the winch which is located on the truck tractor. The innovation, patented by our maintenance superintendent, John R. Hunt, eliminates the necessity of the driver constantly changing fly lines for snatch blocks. The device weighs 200 lb, oscillates by hand, and snap locks in position.

END

(Please resume your reading on P. 76)

FOR BETTER, SMOOTHER BUS AND
TRUCK TRANSPORTATION SPECIFY
**LORD BONDED RUBBER ENGINE
MOUNTINGS**

*... isolates vibration
and road shock with*
**LORD SHEAR-TYPE
BONDED RUBBER
ENGINE MOUNTINGS**

Here's what Mack says about this
improved power plant suspension

*"Elimination of vibration and road shocks, and
greater powerplant accessibility are among the advan-
tages gained through Mack's new method of suspending
the powerplant at three points in tubular rubber-in-shear."*

*As developed for the Mack bus, this powerplant
suspension comprises three rubber-in-shear mountings of
tubular form which support the engine, clutch and
transmission. Two of these are suspended directly from
the main framing of the bus, one being on the front side
of the bell housing, and the other at the timing gear
end. The third, at the rear of the bell housing, is sus-
pended from the stiff framing above by a vertical rod."*

LIKE Mack, you can improve your bus
or truck performance by specifying Lord
Shear-Type Bonded Rubber Engine Mount-
ings. They contribute maximum softness and
vibration isolation of torsional firing impulses.
Result . . . smoothness and quietness through-
out the entire engine speed range.

Whether you make buses or any other prod-
uct, you can increase your sales by eliminating
costly, nerve-wracking vibration and noise.
It will pay you to consult Lord . . . make us
your headquarters for product improvement
by Vibration Control.



Above—the Mack Model C-41 Bus
and close-up of Lord Engine Mountings



MAKE GOOD PRODUCTS **BETTER**
with *Vibration Control*

LORD MANUFACTURING CO. • ERIE, PA.

Field Offices: Detroit • Chicago • New York • Washington, D.C.

Providence, R.I. • Burbank, Cal. • Philadelphia, Pa.

Canadian Representative: Railway & Power Engineering Corp., Ltd.



FLEETMAN'S LIBRARY

A Review of Booklets and Catalogs Fleetmen Will Find Helpful

LESSONS IN ARC WELDING, the third edition, containing 158 pages with 58 lessons and 228 photographs. The book sets forth in simple language the practical instruction based on the experiences of Arthur Madson, head instructor of the

Lincoln Arc Welding School. Explains the fundamentals of arc welding and incorporates a wealth of new information such as complete treatment covering welding with alternating currents, new procedures covering large electrodes, newest elec-

trodes and their use, lessons on pipe welding and data on the qualifications of welding operators. Price, 50 cents per copy. Write The Lincoln Electric Co., Cleveland, Ohio.

SPARK PLUG AND CABLE SPECIFICATIONS, a new catalog prepared by the Electric Auto-Lite Co. Carries complete specifications for all passenger cars, trucks and tractors, 1934 to 1937. Write the Merchandising Division, Toledo 1, Ohio.

ALEMITE "RX" LUBRICATION PRESCRIPTION MANUAL, containing lubrication specifications for all 1946 passenger cars and light trucks—available to service outlets through Alemite distributors. Included in the manual is a chart of the lubrication point locations for each vehicle covered. Another new feature is a chart of gas tank, crankcase, radiator and gear case capacities. With Stewart-Warner Corp., Alemite Div., 1826 Diversy Parkway, Chicago.

FWD M 6x6 HEAVY-DUTY TRUCKS, Bulletin No. 473, a 33 x 11-in. folder describing and illustrating in colors FWD's line of six-wheel-drive trucks. Available from Four Wheel Drive Auto Co., Clintonville, Wis.

CATALOG AU-500, giving one-point reference to all fast-moving materials required for an expert brake job. Containing 80 pages, the publication lists such items as hydraulic brake parts, fluid, lining, rivets and clutch facings. Printed on high-quality paper and bound with heavy-durable cover. Write Wagner Electric Corp., 6363 Plymouth Ave., St. Louis 14, Mo.

A PRESENTATION OF WELDING & CUTTING EQUIPMENT, a 20-page sales catalog showing in color illustrations a comprehensive portion of the line of Victor gas welding and flame cutting apparatus. Write Victor Equipment Co., 844-54 Folsom St., San Francisco, Cal., for a copy.

BANTAM SUPERCARGO TANDEM, a new folder describing Bantam's series of truck trailers. In addition to an explanation of the mechanical features, the folder lists specifications for the new trailers. Models shown as available include closed vans, open vans, platform trailers and chassis. Write American Bantam Car Co., Butler, Pa.

(TURN TO PAGE 156, PLEASE)



"Pardon me—I thought your window was closed."



"I'll take the Imperial every time"

So Simple to Use

Your Men Will Choose

IMPERIAL "K"

SINGLE SOLUTION FREEZETESTERS

For Faster, More Dependable Radiator Testing

For accurate testing of one type of anti-freeze there are no better instruments than the Imperial "K" Single Solution Freezetesters.

The extra length, easy-to-read scale on the float and the big 10-degree graduations on the thermometer make it easy for even your newest men to make accurate tests. All readings are made with tester in its natural, vertical position.

Thermometer scale and correction chart are sealed in the jar—no dirt or radiator solution can reach them.

	Net price to Fleet Owner
No. 548-T For "Prestone" brand Ethylene Glycol.....	\$1.90
No. 549-T For "Zerex".....	1.90
No. 551-T For Alcohol.....	1.90
No. 552-T For "Zerone".....	1.90

Ask For Bulletin 328 • See Your Jobber

No. 546-T Imperial "K" High Speed Universal Freezetester tests all basic solutions of alcohol, methanol, ethylene glycol. Simplest, most practical, and easiest-read universal tester on the market.

Net price to Fleet Owner.....\$ 4.40

IMPERIAL

THE IMPERIAL BRASS MFG. CO.
1209 W. Harrison St., Chicago 7, Ill.



Brazing Fittings • Flexible Fuel Lines • Tube Working Tools
Battery Hydrometers • Barrel Faucets • Welding Equipment

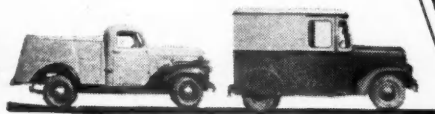
Tops in Delivery Efficiency!

That's right! The delivery efficiency of YORK-HOOVER BODIES is tops because York-Hoover engineers give full consideration to individual fleet requirements.



For over fifty-five years, ever growing experience plus top quality materials and fine craftsmanship have been the basic factors contributing

to the reliable performance of York-Hoover Bodies . . . factors, too, that have earned and maintained the valued confidence of our customers.



YORK,

YORK-HOOVER
BODY DIVISION
CORPORATION



PENNSYLVANIA

Fleetman's Library

(CONTINUED FROM PAGE 154)

TWENTY-FOUR POINTERS TO LEAF SPRING INSPECTION, a new graphic chart revealing key symptoms of spring failures through cross sectional drawings of effected parts. Below each diagram is concise text indicating both the immediate and the long-range effects of the danger signal. These wall posters are 34 x 26 in. Available through spring distributors or from the home office, Maremont Automotive Products, Inc., 1600 S. Ashland Ave., Chicago 8, Ill.

MECHANICS ROLLER BEARING UNIVERSAL JOINTS, a 74-page, illustrated publication showing the application, design, sizes, advantages of this type of universal joint. In addition, part of the booklet is devoted to a discussion of the care and servicing of the joint assembly. Produced in brilliant colors, the publication is bound in heavy glossy, dirt-resisting cardboard. For a copy, write Mechanics Universal Joint Division, Borg-Warner Corp., Rockford, Ill.

CEE BEE COLD CLEANER, a new four-page folder describing and illustrating the company's unit. Discusses de-carbonizing, degreasing and bright-cleaning

blocks, pistons, crankcase assemblies and other parts. For free copies write Cee Bee Chemical Co., Inc., 655 E. Gage Ave., Los Angeles, Cal.

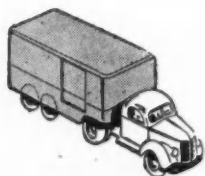
PYRENE FIRE EXTINGUISHERS, a new circular illustrating and describing the cartridge-operated 2½-gal Pyrene water type and the anti-freeze units. Available from Pyrene Mfg. Co., 560 Belmont Ave., Newark 8, N. J.

NEW ACCESSORIES CATALOG, describing a complete line of welding accessories for arc and gas welding. Write Metal & Thermit Corp., 120 Broadway, New York 5, N. Y.

KUM-KLEEN SELF-ADHESIVE Labels, a new 2-color folder describing the advantages of these labels, showing a few of the uses and illustrating a few of the uses of this product. Available from Avery Adhesive Label Corp., 36 W. Union St., Pasadena 1, Cal.

TWO RUSCO WINNERS . . .

HEAVYWEIGHT DIVISION!



The job of slowing down and stopping the "big boys" of the highway . . . giant trucks and buses, calls for the kind of husky stamina you'll find in these two outstanding Rusco products.



RUSCO HEAVY DUTY BRAKE BLOCKS

of high asbestos content and scientifically correct binder materials are moulded under tremendous pressure. They stand up and give top grade, economical service over long periods of grueling use.



RUSCO ACE BRAKE LINING

is made to do the job better . . . and to do it better longer! Fine performance and ability to wear have made this quality, heavy-duty, woven-moulded brake lining the best known in the industry!



"The Standard of the Industry"

THE RUSSELL MANUFACTURING COMPANY, Middletown, Conn.

Quiz Answers

CCJ Quiz on P. 82

1. b. 1946 registrations showed Australia with 356,173 trucks for its 7,229,864 population, a ratio of 1 to 20.3. United States had 5,603,749 trucks for its population of 131,669,225—1 truck for every 23.5 persons. New Zealand also led the U. S. with a ratio of 1 to 22.9.

2. c. 1946 figures given by the U. S. Chamber of Commerce show a world registration of 9,924,280 trucks and buses. Almost 57 per cent of them are in the United States.

3. d. Russia with an estimated 1,020,000 trucks.

4. a. Figures published by the Automobile Association show that out of 940,830 factory sales, 753,887 went into the domestic market and 186,943 were for the foreign market, roughly 1 out of 5 for export.

5. a. Canada exports the greater portion of its automotive production. In 1945, it shipped out 122,812 cars and trucks, while importing only 2,091. The war, of course, had a lot to do with this, but even in normal years Canada exported a lot more than she imported.

6. c. Brazil had 104,202 trucks in 1946. Argentina was second with 81,075.

7. c. India, but even there the total is only 60,000 trucks, less than the state of West Virginia.

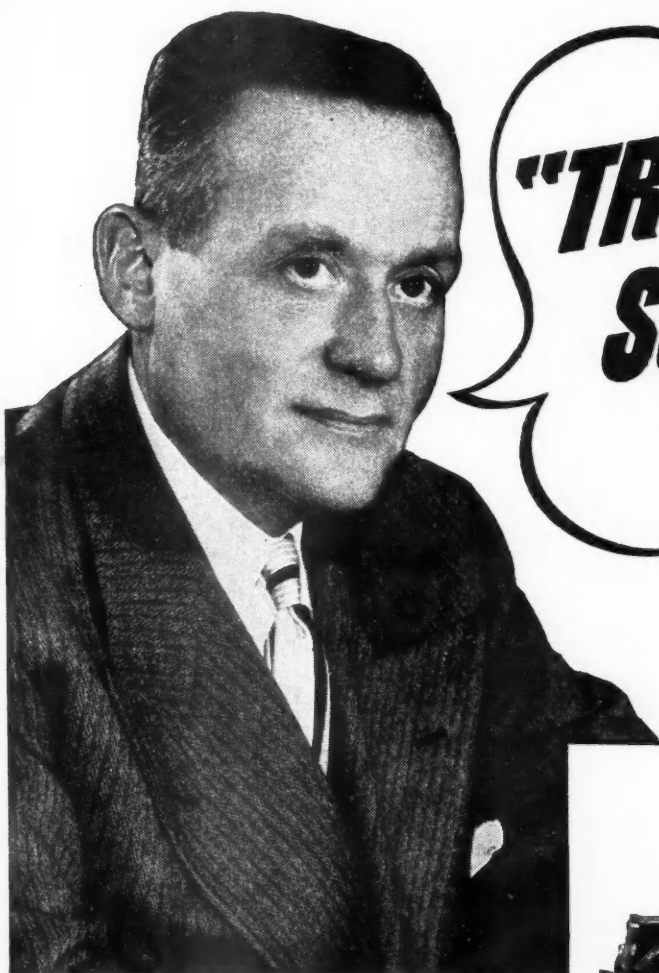
8. b. According to R. L. Polk Co. figures, there were 123,775 trucks in the city of New York last year, a total that was surpassed by only five entire countries . . . Russia, Great Britain, France, Canada, and Australia.

9. a. Yes . . . more than Great Britain or any other foreign country. California has more than three million cars and trucks.

10. d. Russia has only 180,000 passenger cars but more than a million trucks.

END

(Please resume your reading on P. 84)



**"TRAILMOBILES
Save Us Money
5 WAYS!"**



**Says Mr. Robert Gottfredson, President
of Transamerican Freight Lines, Detroit**

Transamerican—one of the nation's outstanding common carriers—operates equipment valued at more than \$2,000,000! A vast flow of freight is kept rolling between major mid-western cities. Only the most modern equipment and methods are used. The management is buying Trailmobiles because they are ideal for their needs . . . save them money in all the important ways shown on this page.

• • •

1. TRAILMOBILES SAVE TIRES! Because Trailmobile's remarkable new tandem equalizes the weight evenly and smoothly on both axles and *all* tires by means of two simple "rocking beams," Transamerican saves up to \$60,000 per year in tires alone. And there are only two moving parts.

2. TRAILMOBILES SAVE INVENTORY INVESTMENT! Because all parts of Trailmobile's tandem and single axle are standard, interchangeable, and available everywhere, Transamerican can maintain both single and double axle Trailmobiles without keeping a multiplicity of special parts on hand . . . a savings of thousands of dollars in inventory.

3. TRAILMOBILES SAVE REPAIRS! Because Trailmobile's time-tested brake system gives quick, positive brake action, and because Trailmobiles handle so easily — thanks to the "easiest-pulling under-carriage in the Industry"—Transamerican gets maximum safety under all road conditions . . . big savings in repairs and tie-ups!

4. TRAILMOBILES SAVE TIME, LABOR! Because Trailmobile doors are specially designed for ease-of-use and safety, because the Trailmobile tailgates have tapered edges that make loading easy, and because a new-type prop is 50% more effective, Transamerican is able to load and unload all types of freight quicker and easier . . . at greatly reduced cost!

5. TRAILMOBILES SAVE MAINTENANCE! Because Trailmobile's new-type understructure and fifth wheel plate are specially reinforced, and because the sides are constructed with new "diamond" pattern of short struts, strength is increased, weight is decreased. Result: Less maintenance, bigger payloads!

THE TRAILMOBILE COMPANY—CINCINNATI 9, OHIO

Scientific Maintenance

(CONTINUED FROM PAGE 69)

cles, in all theaters of operation. It is logical to assume that this highly successful standardization reached by the military services would do a great deal towards simplifying the lubricating problems of commercial fleet owners."

Shot Peening Pays Off

FRED K. LANDECKER, manager, Metal Improving Co., read a paper

on "Shot-peening." He pointed out that this process will give "sensational" increases in fatigue life when applied to suitable parts. It is beneficial to any part which is subject to fatigue, shock or impact. Springs of all kinds, gears, axle shafts, crankshafts, connecting rods, etc., show the greatest life improvement after shot-peening. In citing test results on the fork-type connecting rods for Rolls-Royce engines built by Packard Motor Co., Landecker pointed out that shot-peening can save many man

and machine hours by eliminating costly grinding and polishing operations. He indicated that the rods which were shot-peened after rough finish outlasted many times those which were polished.

"Springs are ideal parts for shot-peening," Mr. Landecker said, and pointed out that tests show that shot-peened springs last considerably longer than the conventional ones. The compressive stress set up in the surface by shotpeening will relieve brittleness and notch sensitivity. This fact is especially valuable if limited space makes it necessary to use high stresses in springs.

In a prepared discussion, Dr. Leo Schapiro, Metallurgical Engineer, Development Section, Douglas Aircraft Co., Inc., cautioned that shot-peening should not be applied haphazardly since it does possess some inherent limitations, which make it possible, in certain conditions, to overpeen. For instance, overpeening is a distinct possibility with softer steels and non-ferrous metals, where forces considerably in excess of yield stress are readily attained.

To clarify the significance of overpeening, Dr. Schapiro explained, "A peened article, having compressive pre-stress on its surface, must have balancing tension pre-stress internally. Overpeening is a condition of a very thick surface layer compressively pre-stressed. Balancing tension pre-stress internally can be quite high in such a case. A superimposed service load may fail the part internally with a rather small load application. In such instances, premature failure would be associated with the shot-peening process rather than prolonged service life."

At the Western Gear Works Lynwood, Calif., plant, W. A. Witham, manager of engineering, reported that shot-peening is being economically applied. He pointed out that the most heavily stressed section of a gear tooth is that section at the base of the tooth which includes the root fillets. Unfortunately, the nature of the generating processes used in producing involute gears does not lend itself to the production of root fillets as consistently smooth as the working profiles. Here, then, shot-peening accomplishes a dual purpose. It pre-stresses the surface at the root fillet in compression, to at least partially offset or balance

(TURN TO PAGE 160, PLEASE)

DELAYS and LOST TIME

are the greatest "Headaches" in Truck Management



WAITING
for the load



DELAYED
by traffic jam



IDLE
at Freight
Depot

The Efficient Little Servis Recorder Shows 'em up ... helps prevent 'em

★ "Our drivers know they can't cover up delays," says one truck operator, "because their *Servis Recorder* charts on my desk the next morning settle all arguments *before they begin!* An ounce of prevention, you know . . ."

Records All Idle Time

The Servis Recorder shows you every stop and delay—exactly when and how long—a complete report of all standing time for the truck—all day, and night, too.

It's All On The Chart

That little *Servis Recorder* chart is the greatest argument stopper—the driver doesn't have to take your word for it—he can see for himself that his truck *has "written" its own record.* Write us for the full story. The Service Recorder Co., 1375 Euclid Ave., Cleveland 15, Ohio.



The Servis Recorder

Tells Every Move Your Truck Makes

*Here's the ANSWER
to RISING COSTS!*



FRAM is Guaranteed

To Save You Money, Overhauls, Repairs

Mister—if you're taking a licking on rising maintenance costs—Fram has the answer you've been looking for! Here's Fram's guarantee: Install Fram oil filters on your fleet. If, within 90 days, you don't agree that Fram filters save you many times their cost in repairs, overhauls and maintenance, your purchase price will be cheerfully refunded!

FRAM SAVES YOU MONEY on breakdowns, overhauls and repairs . . . because Fram *cleans the oil that cleans the motor* . . .

prevents wear caused by dirt, dust, grit, sludge and abrasives. Result: less time in the shop . . . more time hauling payloads . . . more profits for you!

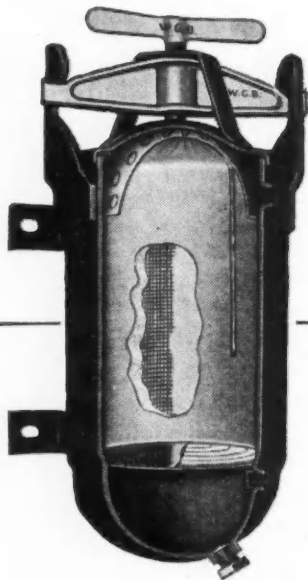
If your fleet already has filters . . . regardless of the make, you can step up their performance by installing genuine Fram replacement cartridges. Contact your jobber today and install Frams all around! Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto, Ontario.

FRAM Oil & Motor Cleaner

Cleans the Oil that Cleans the Motor

WGB

CLARIFICATION



IS MAXIMUM ECONOMY

MR. FLEET OPERATOR: When you received your Autocar, Brockway, Buda, Diamond T, General Motors or Mack motor equipped with a WGB Clarifier, you obtained the best filtration that money can buy—provided you use genuine WGB Cartridges, which are covered by patents preventing duplication. But if you use substitutes, which are prevented from using the WGB principle, you cannot expect WGB economy or motor protection.

The results which induced these manufacturers to equip their fine motors with WGB Oil Clarifiers were obtained by use of the complete unit. It is not WGB filtration unless genuine WGB Cartridges are used. Substitutes cost more, because they do less. Be fair to yourself, to your motor and to the WGB Clarifier. Use genuine WGB Cartridges and you'll get the economy, efficiency and motor protection which the manufacturer intended you to have.

WGB
OIL CLARIFIER, INC.
KINGSTON, N. Y.

Scientific Maintenance

(CONTINUED FROM PAGE 158)

the applied load which is evidenced as tension in the root fillet. Shot-peening also serves to peen over and smooth out any hob or cutter marks present at the root fillet, thus minimizing their effectiveness as stress raisers.

"We are now shot-peening many of the parts of a heavy-duty rear axle which we are building for an 18-cu. yd. self-propelled scraper," Mr. Witham said. "These parts include the main drive spiral bevel pinion and the axle shafts. The fatigue life of these parts in service is substantially higher than that which we obtained with non-shotpeened parts. Many pinions and axle shafts already have more than five times the average predicted life of non-shotpeened parts with no failures or evidence of distress," Witham went on.

The third paper at the "Mechanical Wear, How to Reduce It" session concerned fleet and factory experience in chrome-plating of vehicle parts and is presented on page 46 of this issue with discussions of the paper on page 48.

Plastic bonding of brake lining was discussed by Ralph T. Hickcox, West Coast Manager, Chemical Products, Goodyear Tire and Rubber Co. His paper drew four conclusions:

1. The advent of high shear metal assembly adhesives has made possible the successful resin bonding of brake linings.
2. As much as 800 per cent improvement in bearing strength and 600 per cent improvement in shear strength can be obtained by resin bonding an average brake lining contrasted to a riveted assembly.
3. A satisfactory bonding procedure has been established suitable for the average brake lining establishment. The procedure, although simple, should be followed meticulously for best results.
4. Field tests and fleet experience have shown resin bonded lining to give 70 per cent to 100 per cent longer life.

Bottleneck Barriers

COL. E. O. Sawyer, Jr., publisher of "Western Motor Transport," dealt with West coast highway reg- (TURN TO PAGE 162, PLEASE)

Forecast:



SNOW

WITH THE USUAL BLOCKED ROADS, LOSSES IN TIME, MONEY AND EFFICIENCY...

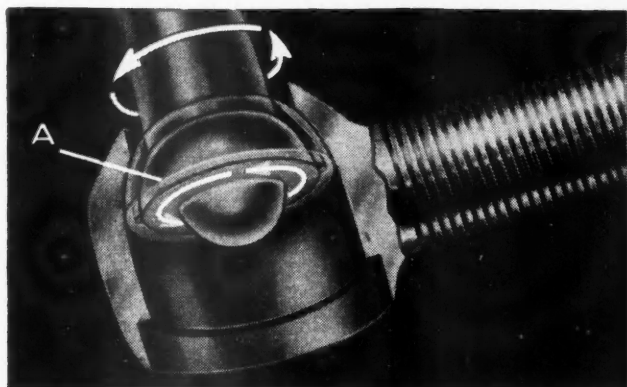
Baker truck-mounted snow plows provide all-around, ever-ready snow removal—with sizes and types to handle snow of every depth and consistency. Available in V-Type, Reversible and Landside models, Baker plows are ruggedly constructed, amply reinforced—designed to withstand the toughest snow removal conditions. Such features as tripping blades, scientifically shaped moldboards, hydraulic controls, and provision for easy attachment and removal have made Baker plows the outstanding choice of transport lines, fleet-owners, and industrial motor pools since 1908. Write now for literature and additional information.

THE BAKER MFG. CO.

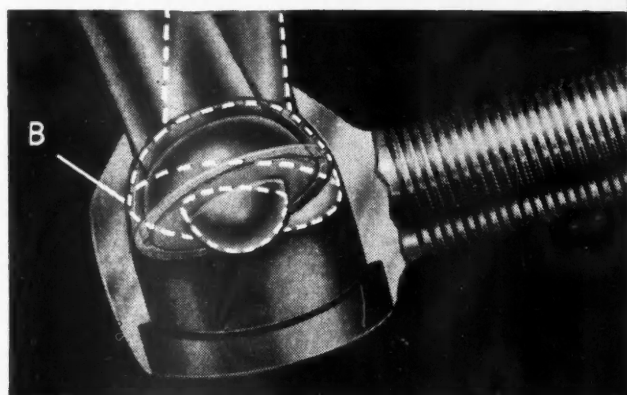
571 STANFORD AVE.
SPRINGFIELD, ILL.

BAKER
TRUCK & TRACTOR
SNOW PLOWS

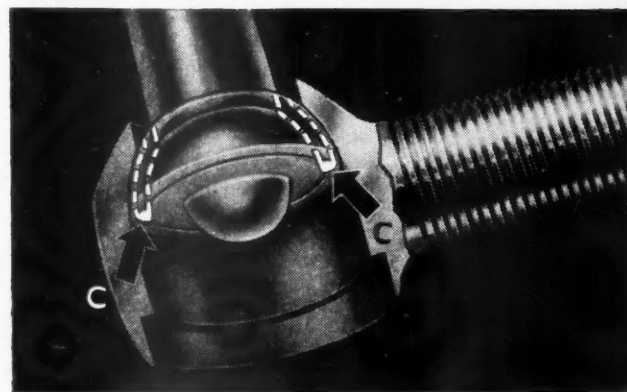
DUAL BEARING CONSTRUCTION! THAT'S WHY *Genuine* TOLEDO TIE ROD ENDS GIVE AMAZING PERFORMANCE!



1 Steering Wear Reduced. Steering action causes a rotating motion of the stud. This wear is handled entirely by the perfectly-seated, smooth-action ball-and-socket bearing A. A separate bearing surface for steering wear assures easier, safer steering over longer operating periods.



2 Springing Wear Reduced. Wheel springing results in an angular movement of the stud. This wearing action is confined to the full-floating bearing B, and eliminates wear on bearing A mentioned above. This assures longer life for the complete assembly.



3 Positive Complete Lubrication. Specially designed grease-distributing grooves C assure continuous lubrication of all friction surfaces on bearings A and B. You will find this construction feature only in Toledo-type Tie Rod Ends. It is a dependable safeguard against the excessive wear which occurs to bearings not protected by the Toledo grease-groove feature.

Because of the superior features built into the complete Toledo Line, thousands of America's "Men Who Know Motors" specify genuine Toledo Products in all their work. For almost

half a century . . . from coast to coast . . . the name, "Toledo," has represented the finest quality in automotive parts.

The **TOLEDO**
STEEL PRODUCTS COMPANY

TOLEDO, OHIO

Since 1906 • Makers of Fine Automotive Parts



Scientific Maintenance

(CONTINUED FROM PAGE 160)

ulations and their effect on transportation management. He urged that pressure be brought to modify existing regulations to permit greater loads and longer trucks to operate over state highways. Sawyer pointed out that although heavy loads have been denounced as principal reason for road wear, water and weather are by far the greater factors.

"Bottle-neck barrier laws still hold back the free flow of products between states," according to David G. Shearer, exec. vice-president, The Trucking Industry, Inc. He reported a slow but steady and encouraging movement toward liberalization. In the West, Idaho and Washington are still below minimum standards recommended by A.A.S.H.O.

Driver Selection & Training

THE all important subject of driver selection and training was care-

fully analyzed by Dr. V. F. Larsen, of the V. F. LARSEN CO., Salt Lake City. "In studying the psychology of the man behind the wheel," he asserted, "it is important to recognize five basic factors that determine the mental make-up of the driver:

1. The kind of heredity he has.
2. The physical and chemical make-up of his body including all physical and glandular constituents.
3. Environment in which one was reared and the influence of the examples set before him.
4. The kind and amount of training he has had.
5. The existing circumstances in his physical and social life. The variation in the traffic behavior of drivers can, in the main, be traced to variation in these factors."

He suggested a list of human factors involved in safe and efficient vehicle operation: physical and mental fitness, skills, knowledge, judgment, habits, attitudes.

Dr. Larsen emphasized that the best direction for driver selection and improvement today involves a carefully planned biographical record of the individual and his driving record, a complete battery of tests to cover as adequately as possible psycho-physical factors, skills, knowledge, personality factors and attitudes, such test results to be the beginning point for a training in self-improvement on the six basic human factors of mental and physical fitness, skills, etc., mentioned above.

Regardless of the merits of the many tests proposed by psychologists, W. A. Baker, District Supt. of Transportation, National City Lines, Calif., felt that those in urban transportation need a practical screening tool to be applied at the employment level, one which will work to such an extent that it will improve the batting average of the interviewer, who still remains the key figure in a selective program. Continuing his discussion of Dr. Larsen's paper, Mr. Baker urged that tests be tailored to specific cases in order to obtain the maximum amount of usefulness and efficiency.

Truck Application

MODERN techniques in choosing the right vehicle for the job, and properly using and adapting the vehicle to the job, was emphasized

(TURN TO PAGE 164, PLEASE)

LOADING or UNLOADING - SAFETY PAYS OFF!

There are three periods of considerable hazard in moving gasoline from the bulk station to the filling station: (1) while loading the truck tank. (2) While the tank truck is travelling on streets or highways. (3) While unloading at the filling station.

We provide dome covers of non-sparking metal combinations, which relieve vapor pressure, but hold the gasoline in the event the tank truck overturns. We furnish hydraulic internal safety valves which preclude loss of liquid in the event of collision or similar accidents. In the event of fire accompanying an accident, or occurring during unloading, the hydraulic safety valves close instantly, saving liquid, life and property.

An S. & J. equipped tank truck is a SAFE vehicle for transporting petroleum.

SHAND & JURS CO.

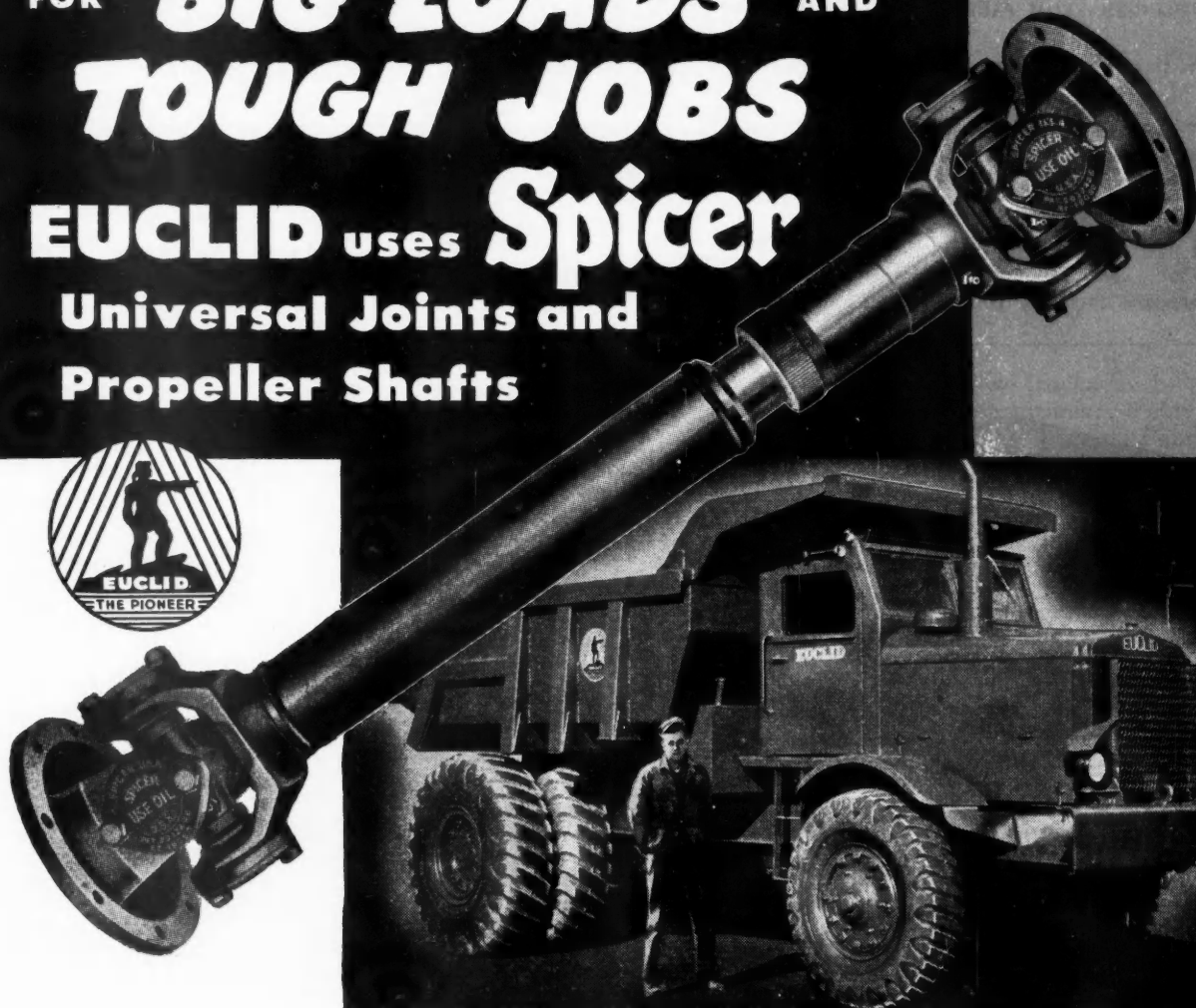
BERKELEY, CALIFORNIA

New York Chicago Houston Los Angeles Seattle



SHAND & JURS

FOR **BIG LOADS** AND
TOUGH JOBS
EUCLID uses **Spicer**
Universal Joints and
Propeller Shafts



● Engineered and built for extremely rugged off-the-highway service, the Model T Rear Dump Euclid Truck has a capacity of 22 tons payload.

The delivery of tremendous power from the 240 or 275 horsepower Diesel engine in this job is entrusted to heavy-duty Spicer Universal Joints and Propeller Shafts.

Spicer products, including transmissions, gear boxes, rear axles, universal joints and propeller shafts, are used in large numbers in every type of automotive vehicle made. Spicer engineering experience and manufacturing skill are available for the development of efficient power transmission in your products.



SPICER MANUFACTURING
 Division of Dana Corporation
 TOLEDO 1, OHIO

TRANSMISSIONS
 STAMPINGS • UNIVERSAL

TORQUE CONVERTERS • PASSENGER CAR AXLES • CLUTCHES • PARISH FRAMES
 JOINTS • SPICER "BROWN-LIPE" GEAR BOXES • RAILWAY GENERATOR DRIVES

SEPTEMBER, 1947

Use postage-paid card inserted at page 65 for free information on advertised products

163

Scientific Maintenance

(CONTINUED FROM PAGE 162)

by J. N. Bauman, vice-president, The White Motor Co. In an excellently prepared paper, "Truck Application," Mr. Bauman made a fine presentation on this important subject. (The second of a series of articles on this subject appears on page 49 of this issue.)

"There are too few 100 per cent

efficient motor transport operations on the highway today," according to E. H. Watkins, western regional sales manager, Motor Truck Division, International Harvester Co. In commenting on Mr. Bauman's paper, he pointed to insufficient preliminary study of the particular operation requirements; cheap purchase, knowingly inadequate; change in operation requirements after equipment had gone into service; ignorance of the law, or possibly changes in state laws after equipment had gone into

service; and insufficient knowledge of transportation and of transport equipment to permit intelligent preliminary study.

"Efficient highway transport operation," Mr. Watkins said, "is one in which the equipment, either a straight truck or a combination of vehicles, is transporting the maximum load units, at the best possible speed, and in continuous operation, with the highest degree of safety, at the lowest cost per unit transported."

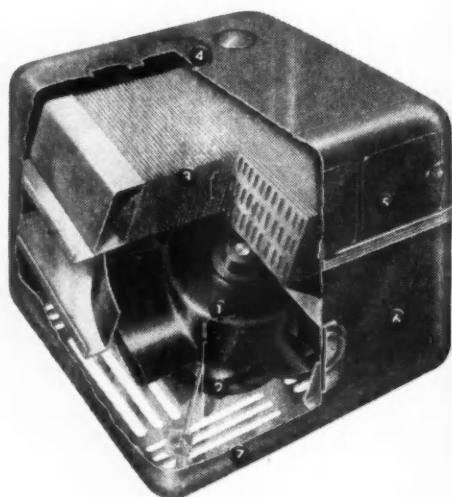
In another discussion of the same paper, R. N. Reinhard, L. A. Automotive Works, Los Angeles, suggested that such safety measures as fluid flywheels or torque converters should be built into trucks. "We've cut our eye teeth on clutches and transmission gears and we should now take the necessary steps to get away from the troubles caused by these. Further development must be made in the transmission of power from the engine to the drive wheels. Such transmission must be automatically controlled."

Trailer Selection

"SELECTION and Application of Trailer Equipment" was presented by V. M. Drew, Fruehauf Trailer Co. He stressed the importance of exercising good judgment in the selection of the right trailer for the job and cited two major elements to which individual consideration should be given from the standpoint of operational economics. The first element has to do with maximum revenue producing ability, and, the second, with minimizing maintenance expense . . . both profit producing items. Few automotive people dispute the fact that "it costs just as much to haul 100 lb. of dead weight as it does to haul 100 lb. of payload," but a reduction of dead weight in itself never appears on the revenue producing side of the ledger. The payoff really comes in extra payload, and how to legally increase that payload is well worthy of careful consideration.

"Improper design of trailers has caused excessive maintenance costs," was an opinion voiced by A. J. Eyraud, Asbury Transportation Co. He suggested a reduction in the number of moving parts in the tandem axle assembly, as certain trailers use

(TURN TO PAGE 260, PLEASE)



FOUND ONLY IN THE NEW EVANS SUPER DELUXE HEATER-DEFROSTER

EVANS Super Deluxe Heater-Defroster is engineered to surpass in performance today's most rugged and powerful heavy-duty vehicle heaters. It is packed with the heating and defrosting power that has made EVANS America's leading heavy-duty vehicle heater.

7 IMPORTANT TRUCK-CAB HEATER FEATURES

- ① Powerful damage-resistant Airfoil Fan
- ② Heavy duty bus-type motor
- ③ Extra-large heater core
- ④ Defroster outlets for every type vehicle
- ⑤ Five controllable heat outlets
- ⑥ Beautiful style and finish
- ⑦ Durable aluminum case



EVANS
PRODUCTS COMPANY
PLYMOUTH, MICHIGAN

THERMO-AIRE
DIVISION

Look for signs of trouble in your used oil

To keep your hard-to-replace trucks on the road longer, take these two precautions: First, use *improved* Valvoline—the original Pennsylvania oil—and second, get a thorough check-up on crankcase drainings through Valvoline Fleet Control Laboratory Service. Such a check-up often reveals costly trouble in the making.

Valvoline Motor Oils give engines full protection; that's been proved by millions of miles' service in every type fleet. And as a Valvoline user, you can get the services of our "Fleet Lab" staff of experts, who are equally at home in the laboratory and the shop.

They will tell you the safe, efficient drainage period for your motor oil; they'll suggest what to do if the condition of your drainage sample indicates faulty operation. Remember—"a stitch in time, saves nine."

Ask your Valvoline man how you
can get this service—or write

VALVOLINE

FLEET CONTROL
LABORATORY SERVICE

FREEDOM-VALVOLINE OIL COMPANY

Dept. 41-I Freedom, Pennsylvania



Detroit Dispatch

(CONTINUED FROM PAGE 68)

to be using them on the DeSoto. At the moment, however, no one sees bonded brakes as safe for use on heavy-duty trucks.

Bumper Study in SAE's Lap

Insiders say that controversy between truck manufacturers and ICC over installation of rear bumpers on trucks is by no means settled. The SAE Committee, in its report on passenger car bumper standardization, included a report that rear bumpers on trucks larger than ½-ton were

highly impractical. However, ICC is reported to have returned the truck bumper study to the SAE Committee where it is certain to get another thumbs down. If ICC insists that it must be done, the situation probably will wind up in a stalemate. The committee's view is that rear bumpers on trucks will create a tremendous problem from a design standpoint and also would work a real hardship on operators who would find the bumpers continually in the way when backing into loading docks. They contend that the number of accidents involving passenger cars running under the rear end of trucks is very small and not great enough to warrant the added burden of rear bumpers for trucks.

More Automatic Shifts

It now seems pretty definite that Buick will have an automatic transmission available as optional equipment on some of its 1948 models at least. The transmission is said to be of the torque-converter type. Machinery now is being purchased for manufacture of the unit. Pontiac also is likely to have an automatic transmission available next year. However, there is little possibility of automatic shifts on Ford, Chevrolet, and Plymouth next year. Our sources say that even if the price angle can be licked, there is not enough capacity to build the units in the volume that these three makes would require.

Timken Axle Trust Suit Dropped

Under a consent decree, an anti-trust suit brought by the Government against Timken Detroit Axle Co. has been dissolved. The company agrees not to withhold from truck and bus manufacturers about 150 licenses for patents it holds and also will not require such manufacturers to buy parts from Timken in exchange for patent rights. The company stated that patents involved were owned by the Government with Timken holding license rights and that it had been willing to discuss changes in licenses with the Department of Justice but had been given no opportunity to do so.

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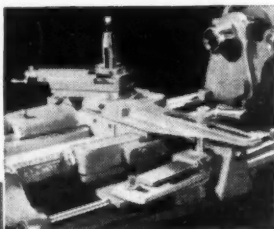
Keep Your Profits WITH A SOUTH BEND LATHE

Profits walk out of your shop every day if you don't have a South Bend Lathe. Every machining job sent outside represents the sharing of profits with someone else. You can't afford to be without a South Bend Lathe—they are made with 9", 10", 13", 14½", and 16" swings. Write for Catalog 100-F for complete information.

PROMPT DELIVERY—See your South Bend distributor today for immediate delivery from his stock or early factory delivery.

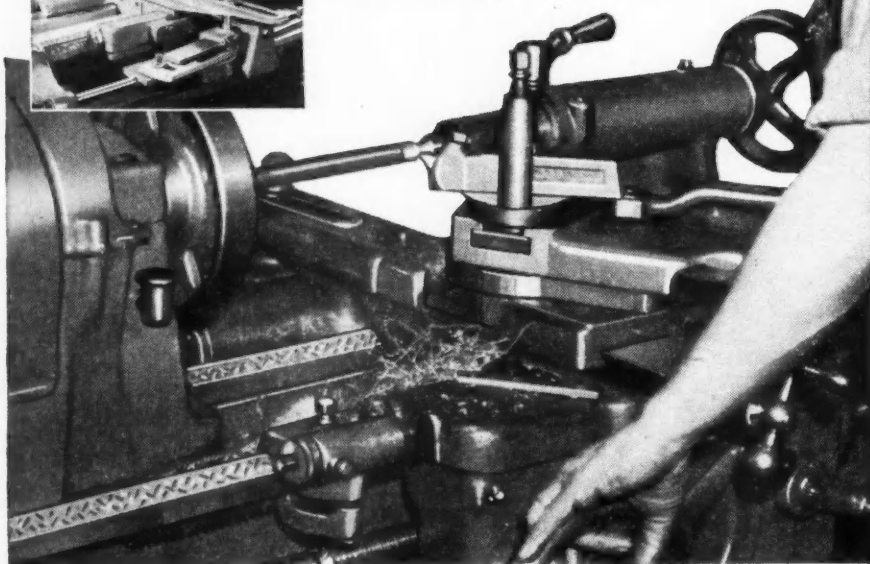
PRICES—Start at \$145.00, f.o.b. factory, less electrical equipment. Average increase less than 15% over prewar price level.

TIME PAYMENTS—South Bend Lathes available on terms of 25% down, 12 months to pay balance. Moderate finance charge.



TAPER ATTACHMENT

Provides accurate taper turning and boring. Scaled in inches and degrees, maximum setting 3½" per foot (16½°).

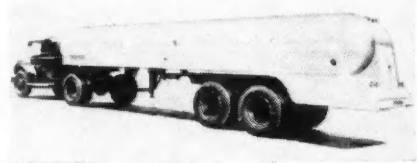


BUILDING BETTER LATHES
SINCE 1906

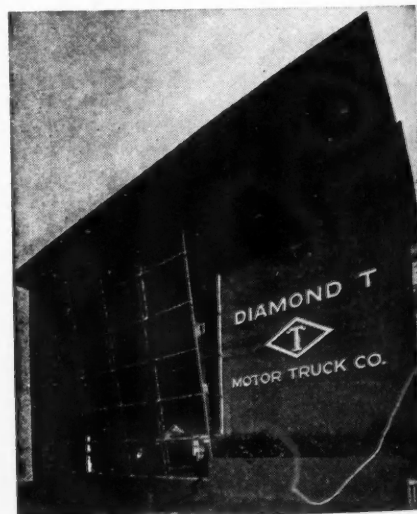


SOUTH BEND LATHE WORKS

445 E. MADISON STREET • SOUTH BEND 22, INDIANA



Twin-barrel tanks on this fruehauf tandem are designed to withstand 200 lb working pressure for use in propane hauls. Capacity is 6000 gal



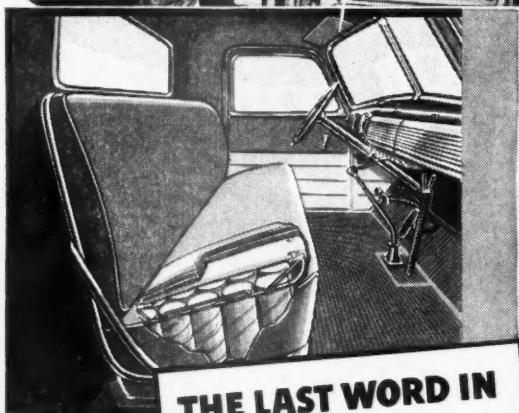
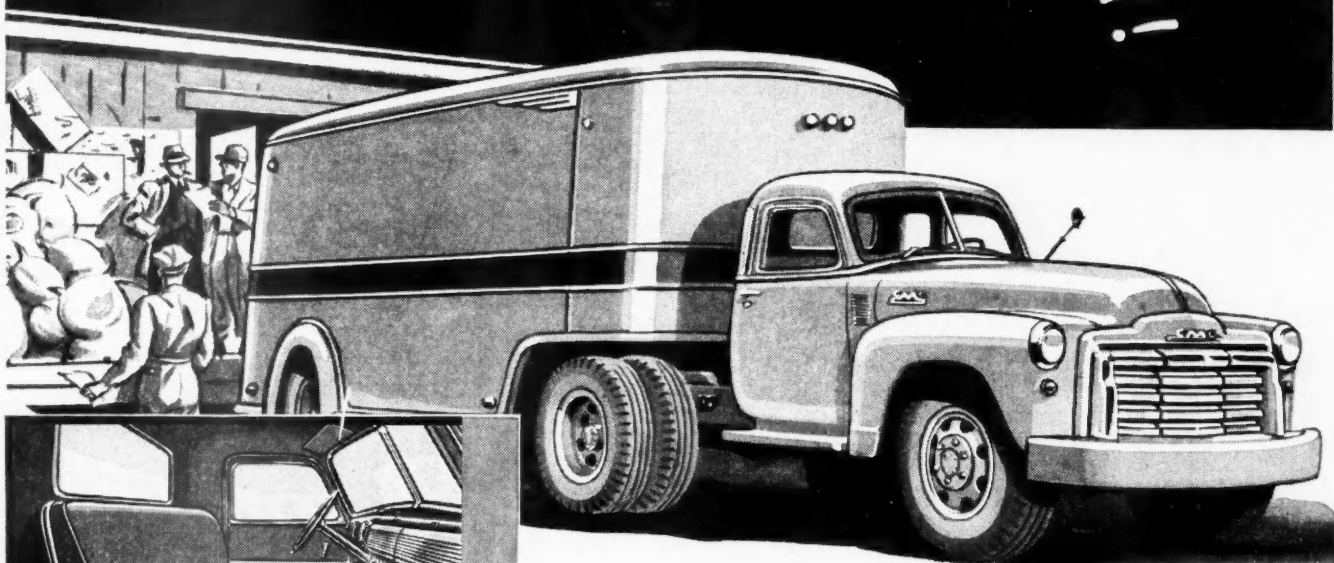
Diamond T's new headquarters in San Francisco sports this ultra-modern front featuring a window 30 ft. high, 28 ft. wide. Inside are 30,000 sq. ft. of floor area packed with every convenience for truck sales and service

New GMCs

BETTER LOOKING!

BETTER RIDING!

BETTER BUILT!



**THE LAST WORD IN
CAB COMFORT**



There's comfort galore in the cab of a new light or medium duty GMC! It's all-steel . . . wider and longer . . . completely insulated and soundproofed. Its adjustable seat has 73 individually wrapped springs . . . heavy upholstery and padding. Its windshield is higher and wider . . . visibility greater all around. Its unique ventilation system provides circulating fresh air . . . heat if desired. Dome light, ash tray and sealed-on handles are three of its many finer appointments.

Out front, there's added protection with rugged bumper bar grille, frame-mounted and angle-braced. Under the hood, there's war-proved, improved power with engines of "Army Work-horse" design. Under the load there's solid strength with heavier axles and frame. And overall, there's a complete range of chassis and body types with a smartly styled model for your job.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

THE TRUCK OF VALUE



GASOLINE • DIESEL

Introducing . . .

(CONTINUED FROM PAGE 93)

. . . DON E. FRICKER as assistant advertising manager for the Heil Co.

. . . GEORGE MILLER as assistant sales manager in charge of truck and tractor seat sales for Monroe Auto Equipment Co.

. . . ROBERT A. WEINHARDT as automotive power plant engineer for Willys-Overland Motors.

. . . HOWARD F. KIDWELL, who will be in charge of fleet sales for the B. F. Goodrich Co.

. . . W. L. TUCKER as assistant manager, service and mechanical department of Chevrolet Motor Division.

. . . W. T. SCARBOROUGH as southern zone manager for the American Bantam Car Co. He will cover both southern and southwestern states.

. . . R. R. KERR as advertising manager of the Valve and Saginaw divisions of Eaton Mfg. Co.

. . . ROBERT G. DeLONG as manager and W. B. GIBSON as sales manager of the Hydraulic Division of the Twin Disc Clutch Co.

. . . SELBY F. GREER as general sales man-

ager of the Kellogg Division, American Brake Shoe Co.

. . . CORWIN T. GEYER, who has been named general manager of the Bowes "Seal Fast" Corp. He will coordinate the activities of the Indianapolis plant with those in Riverside, Cal., Toronto, Ontario, and London, England.

. . . ALBERT E. ZEISEL, recently named vice-president in charge of sales of the Eutectic Welding Alloys Corp.

. . . WALTER N. WESTLAND, recently appointed regional manager for the Eastern regions for the Cummins Engine Co., Inc., Columbus, Ind.

. . . GEORGE W. STEVENS, recently appointed regional manager for the Mid-Continent regions for the Cummins Engine Co., Inc.

. . . SAMUEL E. PATTISON, recently named Boston regional manager for the Dodge Div., Chrysler Corp. He succeeds M. M. Whipple, who has resigned.

. . . E. M. BRADEN, who has been appointed St. Louis regional manager for the Dodge Div., Chrysler Corp. He succeeds L. W. Neumann.

. . . JAMES D. POTEET, named district manager of the Virginia and West Virginia territory of The Toledo Steel Products Co.

. . . JOHN H. MOSS, elevated to the managership of storage battery and brake lining sales for the Goodyear Tire & Rubber Co.

. . . DONALD L. HARBAUGH, appointed field engineer of Lee of Conshohocken.

. . . E. S. LITTLE, who has been named merchandise manager of Gillette tires and tubes, products of United States Rubber Co.

. . . EDWIN V. DUFFY and O. L. ROGERS as assistant sales managers and R. J. SCOTT as service manager, the Pennsylvania Rubber Co.

. . . ERNEST O. KAMPMEIER as Texas regional wholesale manager for White Motor Co. HORACE MOSTELLER remains as regional manager.

. . . STEPHEN S. BERRY as manager of Kraft service and accessory sales of the General Tire & Rubber Co.

. . . THOMAS B. MOULE who has been assigned responsibility for Plomb Tool Co.'s sales in the eastern half of the United States. JACK G. ALLEN succeeds him in Los Angeles.

. . . RALPH DOHERTY as sales manager of the Automotive Parts Div., Service Supply Corp., Philadelphia. For the past 15 years he has been eastern regional manager of Aluminum Industries, Inc.

. . . CHARLES J. LEDERER as general manager, transportation, for Railway Express Agency, with headquarters at 230 Park Ave., New York. He has held various positions with the company for 38 years.

. . . ALBERT B. ROSENBAUM as assistant to ROBERT J. MCBRIDE, general manager of the Regular Common Carrier Conference of ATA. He was formerly with ICC.

. . . D. T. (DOUG) ANKENY as sales manager of the dynamometer division, Clayton Mfg. Co., El Monte Cal. Before joining Clayton as midwest regional manager he had served as dynamometer and tune-up specialist for one of the major oil companies.

END

(Please resume your reading on P. 94)

OUT OUR WAY



Batting a Thousand in the Safety League!

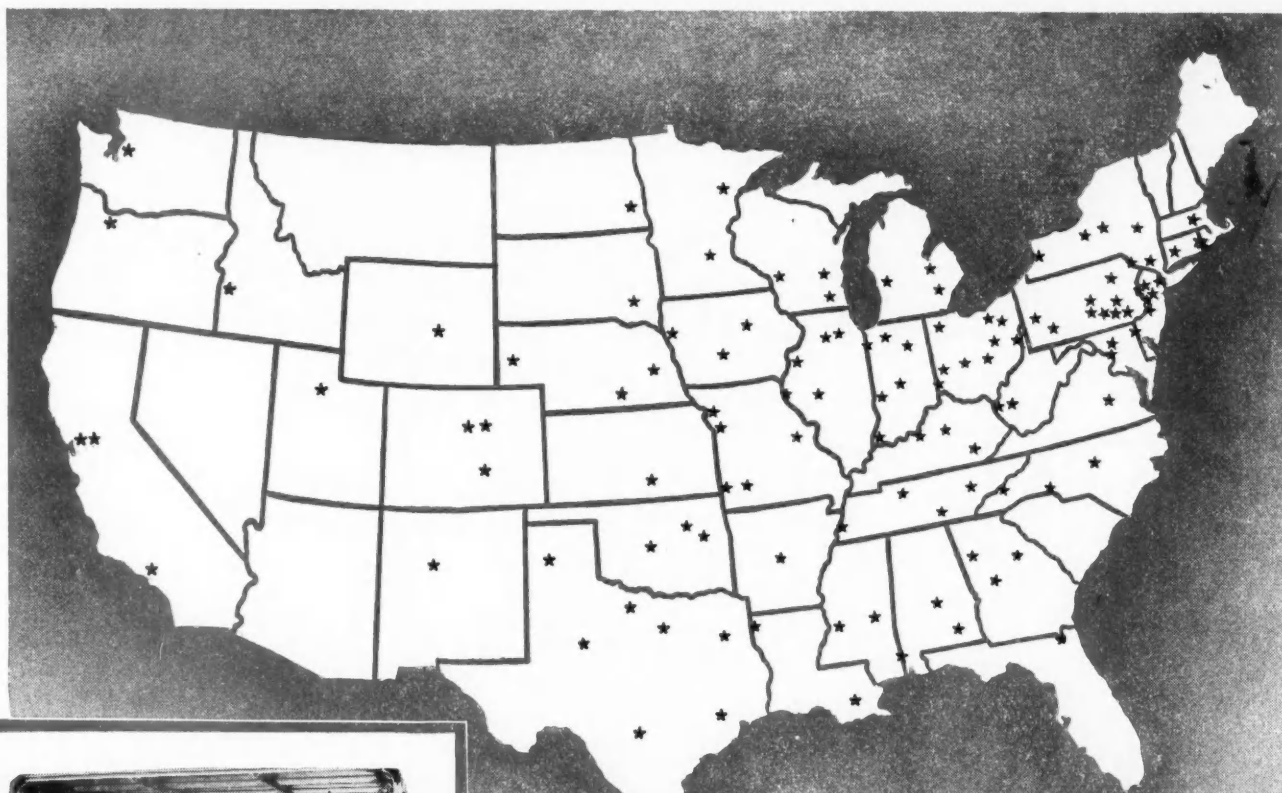
SLIDING may mean the ball game, but such gymnastics on the job can mean a trip to the hospital. And it is so easy to prevent falling accidents with SOL-SPEEDI-DRI, the original and most widely used absorbent. SOL-SPEEDI-DRI lifts efficiency and morale by keeping workers on their feet—up and going without danger of slipping.

There are good reasons for the superiority of SOL-SPEEDI-DRI. It is obtained by selective mining. Stringent laboratory control in production and weather-proof packaging guarantee maximum efficiency from every pound you purchase. If you're looking for results — *more* for your money — buy SOL-SPEEDI-DRI.

Safety and
Maintenance Co., Inc.
No. 1 Wall Street
New York 5, N. Y.

Warehouse Stocks Available
in Principal Cities of the
United States and Canada.



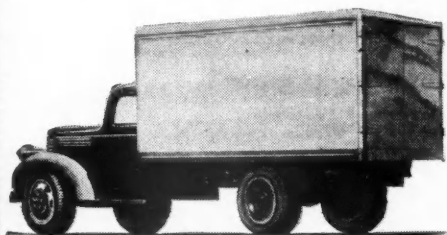


Each ★ stands for a Reynolds Truck Body Distributor ready to serve your trucking needs

Nation-wide distribution means prompt local service



It's as easy as this. If you have an accident your local distributor can remove the damaged section . . . replace it from standard parts . . . and off you go in a matter of hours. No costly layups.



Reynolds Truck Body—straight side. Your choice of 3 widths, 2 heights, 7 lengths, 15 back-door combinations, 8 interior linings . . . over 10,000 possible combinations. All available in standard parts.

REYNOLDS ALUMINUM TRUCK BODIES INCREASE PAYLOAD . . . CUT REPAIR TIME AND COST

"Reynolds Truck Body completely repaired in just 2½ hours," writes the Parkway Distributing Co., of Louisville, Kentucky.

"The difference in payload carried by the Reynolds Truck Body means \$15 more profit per trip," writes the E. M. Holmes Transportation Co., of Buffalo, N. Y.

Just two proved examples of how Reynolds Aluminum Van-Type Truck Bodies are saving time and money for truck and fleet owners all over the country. Aluminum is only ⅓ the weight of steel . . . makes possible outstanding operating economies.

Write us for the name of your nearest distributor. A few territories are still open. Inquiries are welcome. Reynolds Metals Co., Truck & Trailer Division, 1419-D South 9th St., Louisville 1, Ky.



REYNOLDS ALUMINUM TRUCK BODIES



For Tuna Fishing
You Need Special Tackle

FOR COMMERCIAL CAR BRAKE SYSTEMS YOU NEED

PURITAN Super 60 BRAKE FLUID

It takes a specially developed brake fluid too, to stand up under the heavy duty of commercial cars and trucks and that's just what Puritan Super 60 is.

Specially compounded from organic materials, Puritan Super 60 Brake Fluid has all the characteristics built into it to make it superior for commercial use.

BOILING POINT 370°F: No danger of brake failure due to vaporization.

POUR POINT 60°F BELOW ZERO: Remains free flowing and mobile even in Arctic weather.

NON-GUMMING AND NON-OXIDIZING: Has a special base that does not gum or oxidize under any operating conditions.

Yes, you'll be doing right by your cars and truck to start using Puritan Super 60, the specially developed heavy duty brake fluid. You can start getting the benefits by adding it whenever fluid level is low because Puritan Super 60 mixes with all fluids. It's better though, to clean out old, gummy, brake fluid with fast acting Puritan Hydraulic Brake Flushing Fluid and refill with Puritan Super 60. Get both from your NAPA jobber.

MOISTURE ABSORPTION: Capable of absorbing all moisture of condensation—thus protecting wheel cylinders and metal parts against corrosion.

INERT TO RUBBER: Does not cause rubber cups to swell or deteriorate.

MISCIBLE: Mixes with all other brake fluids. Safe to add to any hydraulic brake system.



New Products

(CONTINUED FROM PAGE 67)

Division of L. Sonneborn Sons, Inc., New York. Features of the product, Amalie Sub-Zero Motor Oil, in addition to its lower-than-average pour point, are said to be the following: Makes starting easier in extreme cold; stands up better than when engine warms up, and lubricates efficiently even in sudden warm spells. The new oil is designed for all types of passenger cars, trucks, buses, tractors.

Use Free Postcard for More Details.

P68. Anti-Rust Paint

Speco, Inc., Cleveland, announces that Rustrem (Rust Remedy) anti-rust paint is now available in aluminum as well as in black.

This new paint, according to the manufacturer, can be applied right over rust without brushing or scraping. It is reputed to immediately penetrate the rust layer, render it inactive and seal the surface against further rusting.

It is especially recommended for use under water, in salt water, or in locations where dampness and moisture are ever present.

Use Free Postcard for More Details.

P69. Tube Vulcanizer

The Center Line Mfg. Co., Wichita, Kan., has placed a new type tube vulcanizer on the market. This mandrel type, electrically heated machine has a bandage type pressure plate. All tubes lay naturally during the curing process and stay tube shaped as they are cured to the curve, according to the manufacturer.

The bandage type pressure of this machine is said to eliminate underpatches and permits vulcanizing without throwing innertubes out of balance. The vulcanizer is heat controlled to prevent undercuring of tubes.

The machine is made of heavy cast aluminum. The heating unit consists of two steel sheathed units 250 watts each 115 volts. It is 4½ in. wide, 7 in. high and weighs 20 lb.

Use Free Postcard for More Details.

P70. Auto Cleaner

A new powdered car wash that leaves a film-free, streakless finish without hand wiping is manufactured by The Penetone Co., Tenaflly, N. J.

Penesolve No. 20 is a highly concentrated cleaner without caustics, acid, grit, or free alkali. A compound of wetting agents and synthetic detergents, it loosens dirt without harm to the finest finish or painted surface, according to the company. A clear water rinse under pressure leaves an evenly clean, unstreaked surface without the use of chamois. Windows may be cleaned at the same time. The product is soluble in any water—hot, cold, hard, or soft.

Use Free Postcard for More Details.

(TURN TO PAGE 172, PLEASE)

NOT ONLY 7 SEALS...

Spiro-Seal's Unique Alternating Action

On the downstroke, this steel member contracts with the taper, hugs the wall at correct unit pressure, NOT because of harsh inner-spring pressure, but because of balanced tension within the ring, and because of resistance to contraction provided by inter-leaf friction... On the upstroke, this same inter-leaf friction retards expansion, thus REDUCING pressure, to permit correct wall lubrication.

Taper-Faced Cast Iron Snap Ring . . . 1 seal

Cast Iron Compression Ring . . . 1 seal

Steel Compression Ring 1 seal

Cast Iron Slotted Oil Ring 2 seals

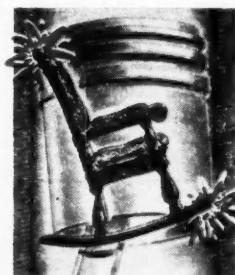
Steel Spiro-Seal, Twice-Around . . 2 seals

TOTAL 7 SEALS

But Different KINDS of Seals, for DIFFERENT Reasons!

No one Ramco 10-Up feature does the whole Ramco Re-powering job. It's the unique Ramco 10-Up combination of features which does that. It's the same with those 7 Ramco seals in a 3 ring piston. No one of them does the whole job; each one does its part, and more besides. Spiro-Seal's unique Alternating Action is an example... Together,

the Ramco 10-Up features enable these rings to compensate for wear in worn cylinders, and to adjust automatically and anticipate wear in re-bored cylinders. That makes these ALL-PURPOSE rings, best for re-bore AND re-ring jobs. Ramsey Corporation, 3710 Forest Park Blvd., St. Louis, Mo. Factories: St. Louis; Fruitport, Mich.; Toronto, Can.



Ramco 10-Up STOPS "Rocking Chair Action" LONGER

RAMCO 10-Up RE-POWER RING

IDEAL FOR TRUCK AND FLEET RE-POWERING JOBS . . . RE-BORE OR RE-RING!

R 2017 F.O.

New Products

(CONTINUED FROM PAGE 170)

P71. Clip-On Fog Lens

A new plastic clip-on fog lens, developed by Hazelite, Inc., New York, is adaptable to all 40/30 sealed beam headlighting units manufactured since 1940. Hazelite is a precision amber lens made of molded plastic which is said to exert maximum penetration, reduces glare and reflection and insures highest possible visibility in darkness, fog, rain.

The lens snaps over the headlamp and is adjustable with the fingertips.

Use Free Postcard for More Details.

P72. Engine Cleaner

Solrun Services, Inc., Philadelphia, Pa., has developed a new type engine cleaner designated as Runzit. This solution is said to act as a sludge and carbon remover with one application, or as a trouble preventive, with an application every 5000 to 7000 miles of engine operation.

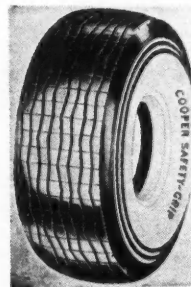
Runzit is a cleaner, not an additive. It will not harm the metals of the engine, according to the manufacturer, and will reach passages and pockets which can be missed in an overhaul job.

The solution is poured into the engine crankcase after the oil is drained. The engine is idled 30 minutes and allowed to

stand for the same period of time. Then a kerosene mixture is used as a flush. The company claims that this cleaner will remove carbon and sludge from oil lines, from valve guide surfaces, from bearing surfaces and from other lubricating areas.

Use Free Postcard for More Details.

Safety Grip Tire



The new premium-priced safety-grip tire developed by the Cooper Tire & Rubber Co., Findlay, Ohio. In a recent issue this tire was associated with another manufacturer. The company stresses that there is no connection with the previous named organization.

Use Free Postcard for More Details.

P73. Atlas Lathe

The new Atlas 10 in. Quick-Change Lathes developed by the Atlas Press Co., Kalamazoo, Mich., are said to save set-up and operating time on every turning operation.

The quick-change mechanism provides fingertip selection of fifty-four threads and feeds—forty-five are obtained by merely shifting two levers on the gear box, and an additional nine by changing the position of a sliding gear.

Other features of the design include Timken tapered roller bearings, precision ground bed, 16-spindle speeds, back gears for extra power, instantly reversible power cross and longitudinal feeds, rapid-change countershaft.

Use Free Postcard for More Details.

P74. Space Heater

This new type gasoline burning heater is designed especially for truck cargo space heating. Built by Anchor Post Products, Inc., Baltimore, Md., the unit is of the vapor entraining type and functions entirely independent of engine or vehicle operation.

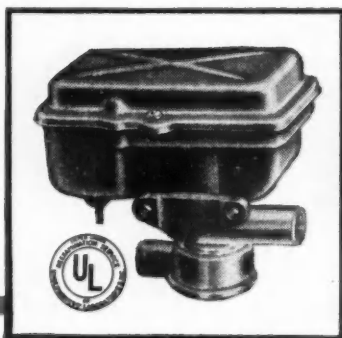


Compact in size—measuring 13 x 10 5/16 x 7 15/16 in.—this heater delivers 15,000 BTU's with a fuel consumption of less than 1/5 gal per hour. Completely self-contained, including fuel pump, the heater is available for operation on 6, 12, and 24-volt systems with thermostat control to maintain cargo space at a predetermined temperature.

Use Free Postcard for More Details.

STEWART-WARNER Electric Fuel Pump

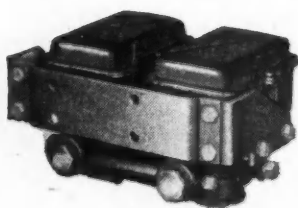
Keeps 'em rolling . . .
Keeps 'em climbing



- Ends vapor-lock and fuel pump failure.
- Operates only when needed.
- Helps maintain tough schedules.
- Insures quick starting in any weather.

- Delivers a minimum of 15 gallons of gas per hour.
- Reduces operating costs.
- Available for 6 or 12 volt installations.

110-DUAL PUMP



Dual fuel pump installations are recommended where gasoline mileage is less than 5 or 6 miles per gallon. Each pump in a dual unit may be wired to a separate switch. By using only one pump in a dual unit, 30% greater fuel delivery will result. The idle unit acts as a booster as well as reserve pump. STEWART-WARNER CORPORATION, 1876 Diversey Parkway, Chicago 14, Ill.

P75. Dresser Stone

A new tool for cleaning and polishing commutators in starting motors and generators is announced by Ideal Industries, Inc., Sycamore, Ill.

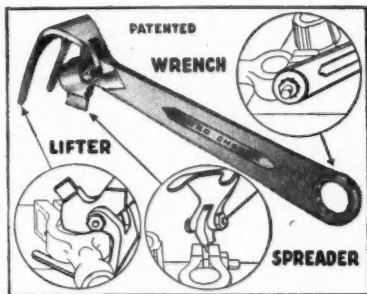
The Commutator Smoothie consists of a long plastic handle with a patented resurfacing stone on either end. The No. 1 resurfacing stone is intended for cleaning and smoothing commutator bars, while No. 2 stone is for polishing.

It removes pits, burns and small grooves, leaving the commutator clean and highly polished—steps up generator efficiency. The long handle makes it easy to reach in on any make car, bus or truck and surface the commutator without cutting or nicking the fingers. Electrical shocks are eliminated because the plastic handle is non-conductive.

Use Free Postcard for More Details.

P76. Battery Tool

A new 3-in-1 battery tool is announced by the Duro Metal Products Co., Chicago. The lifter and wrench is said to simplify the job of removing badly corroded terminal connections and eliminate the danger of damaging battery or cable connections.



Made of forged chrome alloy steel, it is 6½ in. long and one end contains a 12-point box wrench with 9/16 in. opening to fit most battery terminals. The other end has a spreader point for forcing terminal connections apart and lifter fingers that slide under and lift the connection by simple cam action.

Use Free Postcard for More Details.



"And where do you think you're going; to a smoldering bonfire?"

P77. Improved Electrode

The Air Reduction Sales Co. New York, has announced the availability of an improved Airco No. 312 electrode. It is an all-position, mild steel electrode designed to produce weld metal possessing with not only good mechanical properties, but also low hydrogen content.

According to the manufacturer, the improved Airco 312 electrode has two advantages over its predecessor:

1. It can now be used on ac and dc reverse polarity current. Operating characteristics are said to be equally good on either ac or dc reverse. The former 312 electrode could be used only on dc reverse.

2. Preheating of the electrode is no longer required with the improved Airco 312 to obtain porosity-free weld deposits. These deposits can be obtained by using either the stringer bead or the full weave technique.

Use Free Postcard for More Details.

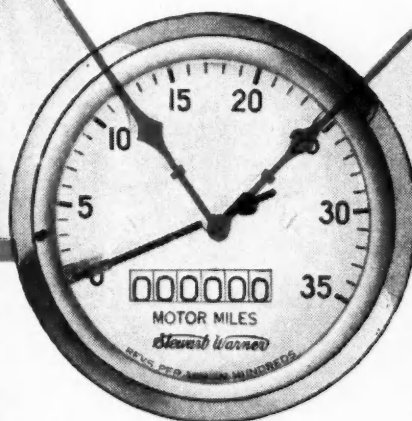
P78. Plastic Finish

A new water-clear, liquid plastic finish developed by the Reyam Plastic Products Co., Chicago, is said to make it possible to protect the finish of a truck in 30 minutes.

The finish is impervious to heat, cold, (TURN TO NEXT PAGE, PLEASE)



Points the way to
greater hauling
profits



Save up to 25% on fuel and oil, and increase the life of your trucks by giving your drivers this visual check to help them keep within the Economy Range... those speeds at which an engine operates with peak efficiency.

Drivers simply keep engine speeds between the two stationary red pointers on the face of the tachometer dial.

The Stewart-Warner Motor-Mile Tachometer also records all engine mileage—whether idling or traveling—providing an accurate record to show when engine maintenance is needed.

Save money on your hauling operations and increase the life of your equipment by installing a Stewart-Warner Motor-Mile Tachometer on every truck in your fleet.

For complete details and prices, see your local Stewart-Warner jobber today, or write to STEWART-WARNER CORPORATION, 1876 Diversey Parkway, Chicago 14, Ill.

New Products

(CONTINUED FROM PAGE 173)

moisture, alcohol, alkalis and most chemicals, according to the company.

A truck owner can quickly wipe the new plastic on with a cloth. It is touch dry in 10 minutes and hard dry in six hours, the manufacturer states.

The plastic can be used to protect metal grills, hub caps, metal or rubber running boards, moldings, steering wheels and interior trim of a vehicle.

Use Free Postcard for More Details.

P79. "Auto-Vac" Pump

A tire pump that operates off the windshield wiper vacuum line and enables the car or truck owner to inflate a tire by merely flipping a switch has recently been placed on the market by Power Brake

The "Auto-Vac" Tire Pump, as it is called, is installed underneath the dash, the vacuum connection being made by inserting a "T" in the hose of the windshield wiper, the entire operation consuming only 15 min.

A 12-ft rubber tube is supplied with the pump. When attached to the pump and the tire valve, all that is necessary is to flip the switch and the automobile engine

does the rest, putting in 5 lb of air in one minute, or inflating the tire from flat to 30 lb pressure in 4 to 6 minutes.

Use Free Postcard for More Details.

P80. Neoprene Tire

Neoprene now is introduced in a premium quality passenger car tire by McCreary Tire and Rubber Co. of Indiana, Pa. This Neoprene Triple Service Tire is said to outwear ordinary rubber by more than 100 per cent. The longer life is due to Neoprene's greater resistance to heat which permits a 60 per cent thicker tread.

It is claimed that the new tire will provide greater safety because of its tread design of vertical and longitudinal slits. Engineers say this tread "squeezes" the pavement dry when brakes are applied to effect faster stopping without skidding.

DuPont technicians point out that Neoprene does not channel crack, chip or radial crack—eliminating the possibility of exposing the tire carcass to destructive moisture, often the cause of tire failure.

Use Free Postcard for More Details.

P81. Brake Bleeder

Gray Company, Inc., Minneapolis, has developed a fast, dependable method of filling and bleeding hydraulic brakes without the use of air pressure.

The one-man operated Graco Brake Bleeder is a self-contained, spring-primed unit which requires no air for operation. It cannot introduce air into hydraulic brake systems to cause possible accidents from brake failures, it is stated.

In one simple operation, the Brake Bleeder supplies air-free brake fluid through a 7-ft hose to master cylinders and forces all trapped air from brake lines.

Adequate pressure for bleeding plugged brake lines is quickly obtainable. Or pressure can be decreased to meet recommendations of certain car manufacturers.



Electrically welded, 3-ribbed, cold rolled steel container with Zinolyte plating is extra strong, yet light in weight. Holds 2½ gal of brake fluid and is easily filled.

Use Free Postcard for More Details.

(TURN TO PAGE 272, PLEASE)

NIEHOFF

Testing Equipment

PROMPT SHIPMENT FROM STOCK

MODEL T-4 TIME-O-LITE
For quick and accurate check of ignition timing and synchronization. Concentrated light gives clear image of timing marks in daylight. Checks spark advance, deficient governor action, worn distributor shafts and bushings. Compactly designed with shock-proof case.

MODEL T-7 GROWLER
Quickly locates shorts, opens grounds in all size armatures. Furnished complete with testing leads from A.C. 110-volt, 60 cycle.

MODEL T-1 ALIGNING TOOL
Quickly and easily aligns Delco-Remy and Auto-Lite contact points. Made from hardened steel and "rust-proof" plated. Individually packaged.

MODEL T-3 CURRENT INDICATOR
An induction Starter Draw Meter, 2½" dia., 1½" deep, when placed over starter cable, also reveals worn bushings, dragging armatures, etc. Complete with instructions.

MODEL T-2 VOLTMETER for D.C.
Ranges 0-5, 0-10, 0-25 volts. 0-5 scale tests battery cells, measures voltage drop; 0-10 scale checks voltage, including voltage regulator, headlight terminals, battery, generator, etc.; 0-25 scale used on 12-volt systems.

MODEL T-8 COMPRESSION GAUGE
A one-man instrument. Indicates cylinder and valve condition. Handle has adapter for several sizes of spark plug holes and locks firmly in cylinder. Indicates pressure to 200 lbs. Air applied through valve in handle locates gasket leaks in motor.

MODEL T-9 VACUUM GAUGE
Simplifies location and correction carburetor, valve and fuel pump trouble. Reads full 30" vacuum and 5 pounds pressure eliminating need for 2 gauges for fuel pump work. Zero calibrator compensates for changes in altitude and pins to prevent damage in engine from back fire.

Ask Your Jobber Today!

C. E. NIEHOFF & CO.
4925 Lawrence Ave., Chicago 30, Ill.

NIEHOFF

APPROVED QUALITY PRODUCTS

7 facts about the NEW GULFLUBE MOTOR OIL H.D.

For Automotive Diesel Engines and Gasoline Engines
in Heavy-Duty Service

1. You'll get cleaner engines and longer engine life with Gulflube H. D.

In automotive Diesel Engines, you avoid high temperature sludge, piston varnish, lacquer, and stuck rings. You get a minimum of fuel soot deposits.

In gasoline engines in heavy-duty service, you avoid deposits and ring sticking due to oil oxidation—also minimize other harmful deposits not caused by oxidation of heavy ends of unburned fuel which contaminate the crankcase lubricating oil.

2. You'll get lower maintenance costs and higher availability—

With less wear, you get lower maintenance costs and less time out of service.

3. You'll get minimum oil consumption—Rings stay clean and free with Gulflube H.D., insuring better compression and proper oil control.

4. You'll avoid bearing corrosion—Gulflube H.D. is entirely noncorrosive to copper-lead or other alloy bearings.

5. You'll assure minimum drag and frictional resistance when starting in cold weather—

Gulflube H.D. has low pour point and a high viscosity index.

6. You'll get freedom from oil foaming in the crankcase—

Gulflube H.D. contains Gulf's patented anti-foam agent, which prevents crankcase foam under all conditions of speed and temperature.

7. You'll get a high-quality paraffin base, full detergent motor oil.

To find out just exactly how GULFLUBE MOTOR OIL H.D. may benefit your particular operation—consult one of Gulf's trained automotive Engineers.

Merely contact your nearest Gulf office. We'll see that an automotive Engineer calls on you whenever convenient.

He'll inspect your fleet. Look over your operation. Then make his recommendations.



Gulf Oil Corporation—Gulf Refining Company

DIVISION SALES OFFICES:

Boston • New York • Philadelphia • Pittsburgh
Atlanta • New Orleans • Houston • Louisville • Toledo

Switch to

GULFLUBE MOTOR OIL H.D.



HARDCOTE FINISHES for Weatherproof Protection!

BRIGHT, RICH, LASTING COLORS . . . Dry in 4 hours

These specially formulated finishes are easy to apply—dry hard to a smooth, glossy, LASTING finish. Resistant to sun, rain, heat and chemicals, they're ideal for trucks, busses and all other commercial vehicles. In use everywhere. Write for color card and information.



MCDUGALL-BUTLER CO., INC. Fine Finishes Since 1887
BUFFALO, NEW YORK

KEEP YOUR VEHICLES MOVING ECONOMICALLY

with

HALL VALVE SERVICING EQUIPMENT

Ask Your Jobber or write
THE HALL MFG. COMPANY
TOLEDO 7, OHIO



VENTALARM

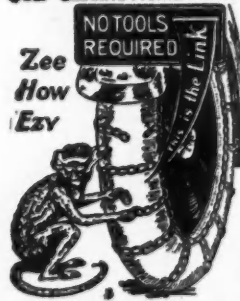
T.M. REG. U. S. PAT. OFF.

Whistling Tank

Fill Signal

SCULLY SIGNAL COMPANY
88 FIRST ST. CAMBRIDGE 41, MASS.

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MONKEY LINKS

Fit all types of Tire Chains. Made in 5 sizes.

Order them today.

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BUSINESS OPPORTUNITIES

FREE—20-page attractive catalog contains hundred Goodwill Building Advertising Specialties. As: Flashlight Key Chains, Key Cases, Mechanical Pencils, etc. Write today. No obligation: PRESTIGE, 630-R Bergen Ave., Jersey City 4, N. J.

Scientific Maintenance

(CONTINUED ON PAGE 164)

roller bearings in some moving parts while other trailers use pins and bushings in similar parts. "Reduced cost of maintenance favors roller bearings," he said. "The bearing area of the pin and bushing type construction is insufficient for long life."

He also urged serious consideration to design of axles and wheel bearing capacities by the manufacturer. The present trend toward use of two axle trailers, he said, has resulted in many axle and bearing failures and brake capacity and design is not satisfactory in the two-axle trailer. The present inadequacies of trailer equipment and the need for improved design are necessitated by increased weight, higher speeds and more desirable safety factors, he said.

Frederick C. Horner, director, Field Operations Section of the Distribution Staff of General Motors Corp., delivered a paper on the subject: "Fleet Operation is Important Business." After citing proof of the importance of highway transport as an industry he urged that more emphasis be placed on driver selection and training and on the closely related subject of public relations, always remembering that the driver is the representative of the fleet operator to all with whom he comes in contact.

Finally, an extremely important paper on the subject of air brake application was presented by Julius Gaussoin of the Silver Eagle Transportation Co. This was covered in complete detail in the July issue of CCJ, beginning on page 40.

END

(Please resume your reading on P. 70)

WANT COMPLETE SERVICE DATA AT A GLANCE?

USE FLEET FORMS

With Fleet Forms it's easy to keep complete service and cost records for every vehicle in your fleet. So simplified any attendant can keep these records. So complete you can see the whole story at a glance. Schedules inspections and periodic maintenance, plus dozens of other types data . . . on one record. Write today for free samples and prices

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for **SAFETY**
REFLECTORS • LAMPS • FLARES



GROTE Manufacturing Company, Inc., Bellevue, Ky.
Automotive Sales Office: Moorestown, N. J.

INVESTIGATE Quixign Lettering Method Now!

Your fleet can be rolling billboards . . . Have enough EYE APPEAL to advertise, sell and deliver your products or service daily wherever they go.

Use . . . Quixign Plain or Adhesive Coated Stencil Paper. Quixign Ready-to-apply Masked Stencils. Quixign Quality Enamels or Lacquers. A complete detailed folder has been prepared, giving step-by-step instructions. Write today for full particulars.

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CLIX ENGINE PROTECTION

Pressure Clix

- Signal device for lost oil pressure—lost air pressure in braking system on gasoline and Diesel engines.

Thermo Clix

- Instant alarming device when temperature of the engine reaches the danger point.

Write for descriptive folder today!

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UNITS AVAILABLE

GRICO

2-AXLE DRIVE

19842 W. Eight Mile Rd.
Detroit 19, Michigan

PROTECT

PERFORMANCE -



WITH THIS HIGH-EFFICIENCY GASOLINE STRAINER

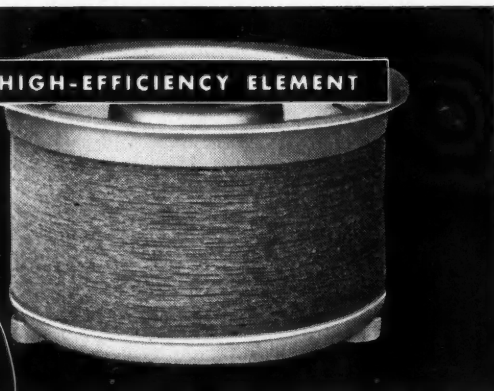
Guard against road stoppages and lost time by keeping your gasoline clean with this new, high-efficiency AC Gasoline Strainer. It traps water, lint, dust, and abrasives. The "Fiberite" Disc Type Element is 100% non-abrasive, acidproof, waterproof, and rustproof. It protects and prolongs the life of carburetor needle valves, valve seats, and jets. It assures a constant and full flow of clean gasoline, and so promotes easy starting as well as reliable performance.

The AC Gasoline Strainer is simple to install and offers your vehicles protection whose value is far beyond its low price. The "Fiberite" Element is separately packaged, and easily replaceable, and the price is very moderate. Ask your AC supplier about the new AC Gasoline Strainer with high-efficiency "Fiberite" Element.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

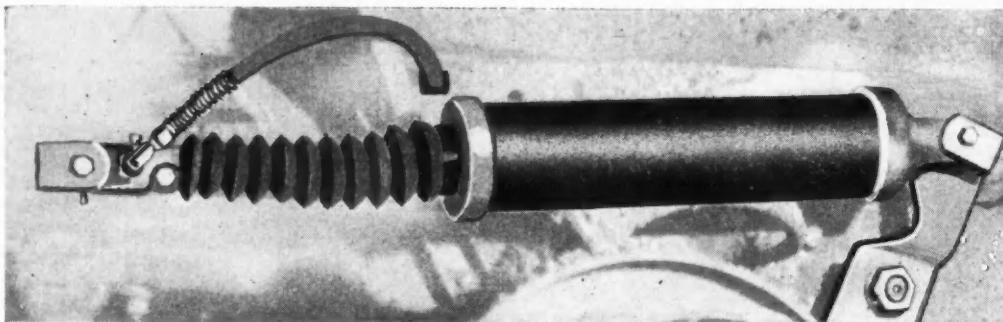


AC GASOLINE STRAINER WITH HIGH-EFFICIENCY ELEMENT



AC
Gasoline

STRAINERS



AIR-O-MATIC POWER STEER CO.

2180 Lee Road

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Easier and Safer TRUCK MANEUVERABILITY

A self-contained unit of extremely simple construction, yet exceptionally effective and precise in operation. No buttons or levers are required to operate the Air-O-Matic Power Steer—it works automatically, helping only as the operator of the vehicle leads the steering wheel in either direction. It automatically stops helping when the operator stops leading the steering wheel. Details and technical information available on request.

operator stops leading the steering wheel. Details and technical information available on request.

SERVICE-PROVED

YEARS of toughest service prove Blackhawk Hydraulics superior in safety, rugged dependability and utility. "Service-Proved" Seal found only on Blackhawks. Only complete line of hydraulic hand jacks—models up to 100 tons capacity.

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Dept. J1197, Milwaukee, Wis.



BLACKHAWK



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OVERSIZE

REAR WHEEL STUDS for all Trucks

Order from Your Jobber



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POROUS CASTINGS RUIN MOTORS

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ZO-TITE

BLOCK
SAVER

Metallic Powder Treatment

A completely different method for the repair of cracked blocks and porosity. Preferred by many fleets. Try it. Test it on tough jobs. COMPARE RESULTS. Money back if no better than your present method. (12 cans to carton).

ASK YOUR JOBBER OR WRITE

THE ZO-TITE PRODUCTS CO.
OZONE PARK 16, N. Y.



CCJ Newscast

(CONTINUED FROM PAGE 96)

truck production with the building of a large extension to its San Leandro, Cal., assembly plant.

Two 16 mm films, one concerning the company's new gravity suspension tandem trailer, the other dealing with automatic semi-trailers have been released by Frehauf Trailer Co. Both are available from all branches.

Fuller Mfg. Co. is expanding its transmission division by the addition of 33,000 sq ft of manufacturing facilities.

Quick Aid Fire Guard is the new name to be used on all types of portable fire extinguishers manufactured by The General Detroit Corp. Formerly nine different names were used for the company's various types.

Great Northern Research Laboratories, Inc., has resumed production of its petroleum-base permanent anti-freeze, known as "No-Freeze," following successful conclusions of litigation with WPB and OPA.

Porte Mfg. Co. (automotive chemicals) is enlarging its manufacturing and research facilities at its Brooklyn, N. Y., plant.

Socony-Vacuum Oil Co., Inc., has unveiled its new lubricating oil pilot plant at Paulsboro, N. J. The plant combines every operation in the manufacturing of lubricating oil under one roof and has a capacity of 200 gal of finished oil per day. It was developed to produce experimental oil in sufficient quantities to support realistic test programs in the field.

(TURN TO PAGE 264, PLEASE)

Trailer Flusher



The first of six 3000-gal trailer street flushers delivered to the City of Detroit by Fruehauf Trailer Co. Three nozzles have 55 lb pressure

FOR PROMPT COMPLETE SERVICE ON AUTOMOTIVE PARTS...

*Your NAPA Jobber
is a Good Man to Know!*



NATIONAL AUTOMOTIVE
PARTS ASSOCIATION
Detroit 1, Michigan



KEEP OIL CLEAN WITH

PUROLATOR

THE OIL FILTER

PUROLATOR PRODUCTS, INC. Newark 2, N. J.

Founder and leader of the oil filter industry



HYGRADE REPLACEMENT PARTS

CARBURETOR & FUEL PUMP PARTS
SPEEDOMETER CABLE AND CASING
SHOCK LINKS AND BUSHINGS
FUEL LINES AND FITTINGS

HYGRADE PRODUCTS CO., INC.
35-35 Thirty-fifth St., Long Island City 1, N.Y.



SPEAKER TUBE AND TIRE REPAIRS

One Reliable Source for all your needs
Electromatic Vulcanizer • Match Patch Vulcanizer • Rubber Rivets • Replacement Valves • Electro-Timer • Casing Patches • Convertible Tire Valves • Valves and Caps • Motorists' Kits • Solvents • Beveled Patches.

J. W. SPEAKER CORP. • Milwaukee 12, Wis.

(Advertisement)

ADVERTISE
IDENTIFY
DECORATE
WITH DECALS

MEYERCORD DECAL NEWS

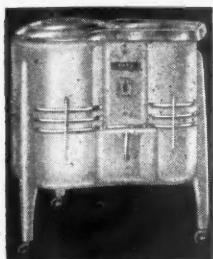
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SEND FOR
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Any Industry Can Profitably Use Decalomania in Some Form

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EVERY BUSINESS CAN USE DECALS

DECAL NAME PLATES SERVE FAMOUS FIRMS



Millions of products in American homes and business are durably identified by Meyercord Decals. Geared to production line speeds, Decal nameplates, trademarks, instructions and other data can be easily applied without screws or bolts at extremely low cost. Decal nameplates are resistant to moisture, oil, acids, temperature extremes, vibration and abrasion. They can be produced in any sizes, colors or designs for application to metal, wood, glass, plastic or crinkled surfaces whether curved or flat. Check for complete details. ☐

NEW 'EYE-APPEAL' WITH DECAL DECORATIONS



Decorated products out-sell plain. Meyercord Decorative Decals offer colorful effects at a fraction of hand-painting time and cost. Easily applied on any commercial surface. Hundreds of stock designs. Special designs on request. No color or size limitation. Easy, quick application. Washable. Resistant to acids, alcohol, grease and rough use. Send sample product or finish for decoration recommendation. Check for full information. ☐

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Meyercord Window and Truck signs are the world's major free-space advertising medium. Meyercord's Decal Sign Ad-Visor tells where and how national advertisers use. Send for copy — free. ☐
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THIS NEW TRUCK DECAL BOOK SENT FREE



See details
at bottom of page

NEW AND UNUSUAL USES for MEYERCORD DECALS

RUBBER: Elasti-Cals stretch with and become a colorful part of rubber surfaces. Applied in mold—or cold.

VINYL: Special Elasti-Cals to decorate and trademark vinyl-base materials.

POULTRY: Easily applied trademark for poultry. Adaptable to greasy, curved surface of skin. Resist freezing, defrosting. Edible colors. Inexpensive.

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NOW • DECAL LETTER KITS



Letter outdoor signs with Meyercord's durable, self-spacing Decal letters at a fraction of hand-painting time and cost. Check. ☐

Investigate Their Time, Cost and Labor Saving Value in Your Business

Nameplates, instruction data, wiring diagrams, product decorations, truck signs and lettering, window valances, counter, mirror and window signs, automotive vehicle licenses, liquor and tobacco tax stamps are but a few of the broad uses for Meyercord Decals.

Decalomania is a process of printing with lacquers and oil colors, instead of ink. The special paper upon which it is printed is soluble in water—permitting the transfer of the Decal film to any desired surface. Adhesion is durable and lasting. Any size, color or design can be made. Their resistance to washing, wear, acids, sun rays, fumes, vibration, abrasion proves Decals value to commerce and industry throughout the world. Read about specific uses on this page. Check and mail page for detailed information. Don't delay. ☐

SERVICE MGR'S WANT DEALER NAMEPLATES



Well known service mgr. says: "Standardized Meyercord Decal dealer nameplates on our products intercept service calls to factory and route them to local dealers." Manufacturers now design their own dealer-nameplates and pool-purchase with dealer's name, address and phone imprinted. Dealers gladly pay for and apply them. Simple device makes order-pooling easy. Pool-buying for thousands of dealers reduces cost 80%. A potent "family-resemblance" addition to factory-identity. Check mark for samples and full details. ☐

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CHECK ITEMS OF INTEREST—TEAR OUT PAGE AND MAIL FOR COMPLETE DETAILS



BIEDERMAN TRUCKS

"Win by performance"

BIEDERMAN MOTORS CORPORATION

Cincinnati 14, Ohio

★ See listing under specifications for further details

FOR ENGINE BEARINGS
CLUTCH PLATES AND PARTS
CHASSIS PARTS

Monmouth
TRADE MARK
is the name

DECALS for FLEET MARKING

Costs less than hand lettering. Does not tie up equipment.

Quantities—50 pieces or more any size.

Can reproduce any art work.

Prompt Delivery

EXCELLO SPECIALTY CO.
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THE COMPLETE LINE
that
Completely Satisfies

Since 1906

The
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Fitzgerald
GASKETS

FOR LOWER OIL COSTS

Cleaner Oil
•
Conserves Engine Life
•
Cuts Oil Expense

Bulletin No. 837 Gives The Facts
•
MICHIANA PRODUCTS CORP.
Michigan City Indiana

MICHIANA OIL FILTERS

CCJ Newscast

(CONTINUED FROM PAGE 262)

The Trailmobile Co. has acquired the tank trailer division of The Hutchens Metal Products Co. (Springfield, Mo.) Production facilities will be modernized and devoted exclusively to the manufacture of Trailmobile's new-type tank trailers.

White Motor Co. increased its net sales to \$56,788,248 during the first six months of 1947 from a figure of \$32,275,981 in the same period of 1946. Net profit for the first six months was \$2,612,855 compared with \$109,962 in the 1946 period.

Cabs and pick-up boxes for Willys-Overland's two and four-wheel drive trucks are being assembled in the company's new body shop, and it is expected that stampings as well as the assembly of bodies will soon take place there, according to a company announcement.

HOME TOWN NOTES

Latest local activities on the part of automotive manufacturers include the following developments of interest to fleetmen:

Buffalo: Appointment of J. K. Bruce of 19 Scott St., as Bantam Supercargo truck trailer distributor.

Cincinnati: A new branch wholesale warehouse and dealer service store of the Pharis Tire & Rubber Co. at 1914 Dana Ave.

Cleveland: Opening of Supercargo Trailers, Inc., at 1785 East 27th St., as distributors for the American Bantam Car Co.

Newark, N. J.: A new factory branch for Highway Trailer Co. at 14 Beacon St.

San Antonio: A factory sales and services branch for White Motor Co. located at 331 South Flores St.

(TURN TO PAGE 266, PLEASE)

J. P. WASHER

Revolutionary NEW washing method for Automotive and Industrial Cleaning.

A real money-saver and money-maker.

Write for further information.

J. P. MANUFACTURING, Inc.
330 E. FRONT ST., YOUNGSTOWN, OHIO

Stop'em SAFELY

with

Gatke BRAKE LININGS
CUSTOM-BILT BLOCKS SETS ROLLS SHEETS

GATKE CORPORATION
228 N. La Salle St. Chicago 1, Ill.

CRESCENT

Wiry Joe

AUTOMOTIVE CABLE

Manufactured by
THE CRESCENT COMPANY, Inc.
Pawtucket, Rhode Island



✓ CHECK THE WIRE ON EVERY JOB



DE VILBISS

Spray-Painting Equipment — Spray Booths — Canopy Exhaust Systems — Exhaust Fans — Air Compressors — Hose and Hose Connections — Oil Guns
Distributors or factory sales and service representatives everywhere

THE DEVILBISS COMPANY
Toledo 1, Ohio



KEEP DOWN COST-per-MILE with BEAR!

Increase tire mileage, cut accident costs! Make or get Bear Tests for Dy-Namic Wheel Balancing, use Bear Alinement, Straightening Equipment; the leaders do! **BEAR MFG. CO., Dep't. C**
Rock Island, Ill.

SPEED WASH FOUNTAIN BRUSH

*Cuts Truck Washing
Time in Half*

As Shown by Actual Operating
Records of Many Fleet Owners



THIS "Speed Wash" fountain brush is the answer to truck washing problems. It soaks, scrubs and rinses in one fast, easy operation. Clean fresh water is constantly fed to the surface from a standard size hose through the 5 ft. handle and eight jets in the 11" back of the brush. Back and handle are of steel. Tufts are of long-lasting, tangle-proof nylon and horsehair mixture. They cannot come out or become loose because they are stitched into the block by hand with rust-proof wire. This brush has been proved on many thousands of trucks, trailers and trains. It is guaranteed to fit your needs. Order today. Include check for postpaid shipment.

Lots of 6 Brushes (Complete)	\$10.95 ea.
Lots of 12 Brushes (Complete)	10.20 ea.
Lots of 24 Brushes (Complete)	9.45 ea.

Brush Heads Only\$7.45 ea.

Lots of 6.....	6.95 ea.
Lots of 12.....	6.45 ea.
Lots of 24.....	5.95 ea.

Brush Parts

5 ft. Handle with Socket....	3.95 ea.
Gasket .....	.20 ea.
Rubber Bumper .....	.35 ea.

Prices F.O.B. Milwaukee Unless
Check Accompanies Order

*Mail
Today!*

MILWAUKEE DUSTLESS BRUSH COMPANY

526 North 22nd Street

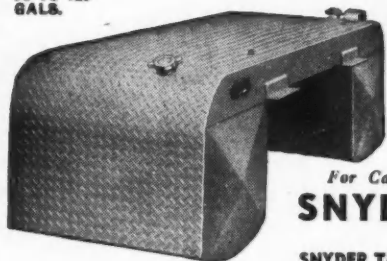


Milwaukee 3, Wisconsin

Milwaukee Dustless Brush Co.			
Milwaukee 3, Wisconsin			
Ship following Speed Wash equipment to:			
Name			
Address			
City, State			
Quantity	Item	Unit Price	Total
	No. 240 Speed Wash Brushes		

SNYDER — THE TANK THAT MADE TRUCK OPERATION SAFE & PROFITABLE MAXIMUM FIRE HAZARD PROTECTION — LESS REFUELING, FASTER, LONG SERVICE RUNS

SNYDER SADDLE TANK
CAPACITY
75 TO 125
GALS.



SNYDER SAFETY TANKS

were born when Truck Transportation struggled as an infant industry. SNYDER progressive engineering research continually uncovering exclusive improvements (patents No. 218-1772-2273737 others pending) leads Truck Transportation into BIG BUSINESS, improvements available only in SNYDER SAFETY TANKS . . . U. L. approved.

WHEN YOU BUY A TANK—BUY A SNYDER TANK—
AND YOU BUY THE BEST.

For Catalog and Address of Your Nearest Distributor, Write:

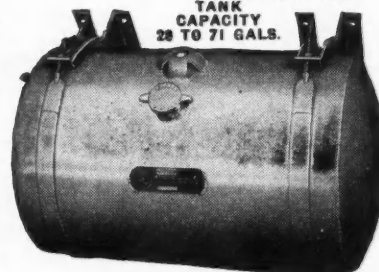
SNYDER TANK CORPORATION

P. O. Box 14, Buffalo 5, N. Y.

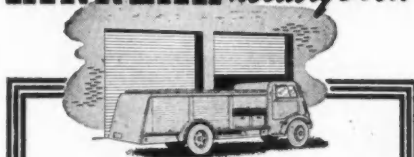
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SNYDER OYLLINDER
TANK
CAPACITY
28 TO 71 GALS.



KINNEAR *Rolling Doors*



On truck bodies or buildings, Kinnear Doors are efficient, dependable, economical. Steel-slat curtain coils upward, out of way. Any size; motor operation if desired. Write for details.

THE Kinnear Manufacturing Company
2100-20 Fields Avenue, Columbus 16, Ohio

Available Trucks

1½ TO 20 TONS
TRUCKS • TRACTORS
TRAILERS • BUSES
(SINCE 1910)
TELEPHONE—BRUNSWICK 1100
AVAILABLE TRUCK CO.
2501 ELSTON AVE.—CHICAGO 47, ILL.

HARD FACED VALVES

Your used valves rebuilt
for
better performance and economy.

LONGER SERVICE OVER UNPROTECTED VALVES

Prompt, Personalized Service
EXHAUST • INTAKE • SODIUM-COOLED
GASOLINE • DIESEL

CLEVELAND HARD FACING, INCORPORATED
2177 W. 28th St., Dept. A., Cleveland 13, Ohio.
Please send information and price list.

NAME
STREET
CITY STATE

CCJ Newscast

(CONTINUED FROM PAGE 264)

PRIVATE GROUP OPPOSES REGS.

The Private Carrier Conference of the American Trucking Associations, Inc., has objected vigorously to the Interstate Commerce Commission's proposal to extend the scope of its safety regulations over private motor carriers, terming them costly and in many cases impracticable.

The Conference objected specifically to the proposed rules governing equipment and accessories, contending the Commission "should content itself with stipulating the end result found to be necessary for safety."

The Conference saw no need for private carriers engaged in local hauling to maintain drivers' logs, contending that all such firms using their own equipment as an adjunct to their principal business operate on a 40-hour work week or less, and maintain payroll records to show total hours worked for each employee. The log, it is held, would be meaningless and useless.

Objecting to the section on inspection and maintenance as being "unduly restrictive," the Conference said some of the wording is burdensome and gives no assurance that better safety standards will result.

NEW MAINTENANCE COURSE

The second annual short course for maintenance supervisors will be conducted at the Pennsylvania State College, State College, Pa., from Nov. 3 to 7. Courses will include all phases of motor vehicle maintenance and are open to maintenance supervisors, shop foremen, and other interested or responsible for the maintenance of commercial vehicles. The enrollment fee is \$15.

TIRE PRICE FIXING SUIT

Eight of the leading tire companies together with eight of their officers and the Rubber Manufacturers Association and two of its officers have been named in a price fixing suit filed by Attorney General Tom C. Clark in the U. S. District Court in New York. The charges, filed during mid-August, included accusations of agreements of prices, discounts, guarantees, allocation of sales production of specified types and other related practices.

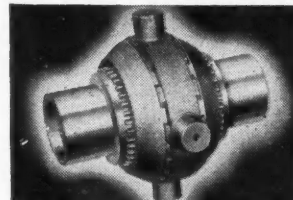
(TURN TO PAGE 268, PLEASE)

FRINK SNO-PLOWS

Both "V" TYPE and
ONE WAY BLADE TYPE
hand or power hydraulic control
FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

CARL H. FRINK, Mfr., CLAYTON, 1000 E. 1., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

NoSPIN Differential



Provides greater traction, greater driving safety, less tire wear. Easily installed in your truck axle.

DETROIT AUTOMOTIVE PRODUCTS CORP.
8701 Grinnell Ave. Detroit 13, Michigan

MICRO-LINOR

The
PRACTICAL

LOW-PRICED LINE OF
WHEEL ALIGNMENT
INSTRUMENTS

Micro-Linor Service Corporation
1629 West Fort St., Detroit 16, Mich.

BE SURE

the trademark "Timken" is on every tapered roller bearing you buy. Timken bearings are first choice with truck and trailer manufacturers. Remember—for the best in bearings—

IT'S "TIMKEN"

Trademark Reg. U. S. Pat. Off.

The Timken Roller Bearing Company
Canton 6, Ohio

• SKF Bearings transform miles into profits.



Keep your old trucks rolling!

Many old pelters rolling along the highways are in good mechanical condition. That's because wise fleet operators use dependable parts for servicing. They're having their mechanics check every part carefully. If bearings

are needed, they consult their nearest Authorized SKF Distributor—the man who puts the right bearing in the right place.

6305

SKF INDUSTRIES, INC.
Front St. & Erie Ave., Phila. 32, Pa.

SKF

BALL AND ROLLER BEARINGS



Fire Takes No Vacation!

AMERICAN SAFETY TANK CO.
KANSAS CITY, MO.

HEIN-WERNER HYDRAULIC JACKS

Made in models of 1½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity as well as service jacks for shop use and Bumper-Lifts for passenger cars. See your H-W jobber for details.

HEIN-WERNER CORPORATION
WAUKESHA, WISCONSIN



DAYTON Spoke Type Steel WHEELS AIR-COOL BRAKE DRUMS AND TIRES

FOR TRUCKS, TRAILERS AND BUSES.
THE DAYTON STEEL FOUNDRY CO.
DAYTON, OHIO

WAUKESHA Multi-Fuel ENGINES

DIESEL OIL
GASOLINE
BUTANE

ALL LIQUID OR GASEOUS FUELS

KEN TIRE TOOLS



LEAD THE
FIELD
ADVANCED
DESIGN
QUALITY
UNSURPASSED
SEE YOUR LOCAL
JOBBER OR
WRITE FOR
LITERATURE

**KEN TOOL
MFG. CO.**
AKRON 3, OHIO

CCJ Newscast

(CONTINUED FROM PAGE 266)

ROADEO RULES REVISED

Two changes in the rules governing the National Truck Driving Roadeo have been announced by ATA.

While minimum wheelbase remains at 140 in. maximum wheelbase has been changed from 160 in. to that designed to carry a body of the size commonly classed as a "12-foot body" and that the "center of the body shall be forward of the rear axle."

The second amendment provides that all straight trucks and tractors used in Roadeo competition must be equipped with dual wheels on the rear axles.

BANTAM SUPERCARGO AWARD

The American Bantam Car Co. will present a special trophy to be known as the "Bantam Supercargo Award" to the winner of the National Driver of the Year contest being sponsored this year for the first time by the American Trucking Association, Inc.

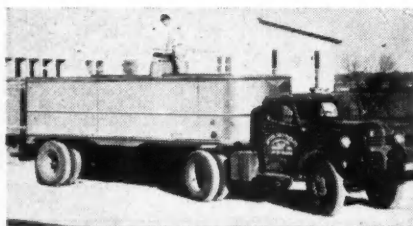
Francis H. Fenn, president of Bantam, has notified ATA that his firm would furnish a large pedestal-type trophy and also an "Autograph" radio-phonograph, the top model of the Stromberg-Carlton line.

PAEA NAMES OFFICERS

The following appointments were made at a recent meeting of the Pneumatic Automotive Equipment Association at Sky-top Lodge, Pa.:

J. D. Lodwick, Curtis Pneumatic Machinery Co., president; R. L. Sears, Lynch Mfg. Corp., vice-president; Roland Lehr, (TURN TO PAGE 270, PLEASE)

Grain Trailer



Fruehauf's new grain haul trailers, in lengths from 20 to 34 ft. features heavy integral frame construction and three-section tail gate with trap door

• RUGER • Hydraulic FLOOR CRANES

RUGER EQUIPMENT CO., Inc.

408 Leader Bldg. • P. O. Box 3821
Cleveland 14, Ohio • Portland 8, Ore.

MORE THAN STRAINS
Actually Cleanses Oil!
DELUXE
Oil Filters
MORE THAN FILTERS
DE LUXE PRODUCTS CORP., LA PORTE, IND.

IDENTIFY TIRES
BRANDING
Quick and Easy!
Code Records Give Data on Tires.
WRITE FOR FOLDER
KEEL & CO., Inc., Phila. 44, Pa.

WARNER
THE ORIGINAL AND PROVEN
ELECTRIC BRAKES
WARNER
ELECTRIC BRAKE MFG. CO.
Beloit, Wisconsin, U. S. A.

HEAVY DUTY MOTOR TRUCKS
AND
**GASOLINE ELECTRIC
GENERATING SETS**
DUPLEX TRUCK COMPANY
Lansing, Michigan

We repeat . . .

THE BEST DECALCOMANIA IS NONE TOO GOOD

Not long ago a fellow wrote us saying this previously published statement implied decalcomania in general, including our product, wasn't much good. Perhaps the word "good" has not been correctly defined.

Decals are made with various materials—lacquer, press inks, oil finishes, so called synthetics and what have you. Cost range is very broad. The word "Synthetic" is particularly abused, for it is mystifying—actually doesn't mean much.

The buyer listens to the decalcomania salesman and usually hears the same story "I offer the best." Well, all white paint looks white in the can but what an appalling difference a year or so after application.

Hence, we repeat, "The Best Decalcomania is None Too Good" adding that we have been making "Permalux" for ten years with a form of Dupont "Dulux" and continue to believe it is from three to five times more durable. Perhaps that's why we can't satisfy the demand despite our recently doubled production. So please give us plenty of time to fill *your* order which we always want.

THE **Permalux** COMPANY

The best Decalcomania is none too good

500 RATHBONE AVENUE

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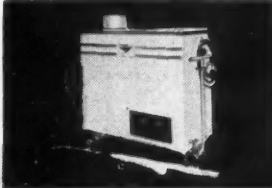
SEPTEMBER, 1947

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269

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CCJ Newscast

(CONTINUED FROM PAGE 268)

Quincy Compressor Co., treasurer; and J. P. Cooper, Westinghouse Air Brake Co., as member-at-large of the executive committee.

INSURANCE SCARCITY MAY EASE

Insurance company representatives told a special meeting of the ATA's Insurance Committee recently that the present scarcity of insurance coverage probably will end within two years, when resumption of competition among insurance companies will tend to reduce insurance costs. But members were warned that the only positive method of cutting insurance rates is to reduce losses by investing in a competent safety program.

Russ Wentzel of the Truck Insurance Exchange, Los Angeles, declared that motor carrier operators should consider a safety program as a sound investment, rather than a cost. He added that accident prevention courses should be part of the curriculum of all schools.

INTERSTATE TAX ILLEGAL

A Connecticut Superior Court has handed down a ruling of vital interest to interstate truck operators in many states. The court ruled that the state's 2 per cent tax on income from interstate trucking business transacted in the state violates the Federal constitution. The suit against the tax was brought against Spector Motor Service, Inc. If the case is taken to the State and U. S. Supreme Courts and the verdict is upheld, it will affect beneficially truck operators in 30 states which have similar laws.

END

(Please resume your reading on P. 99)

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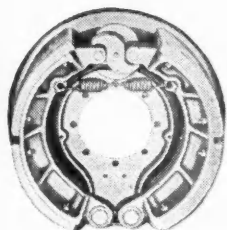
1942 thru 1947
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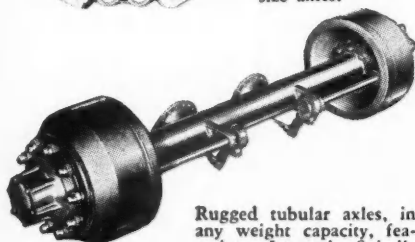


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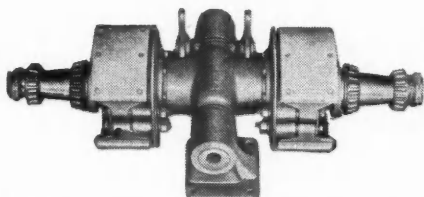
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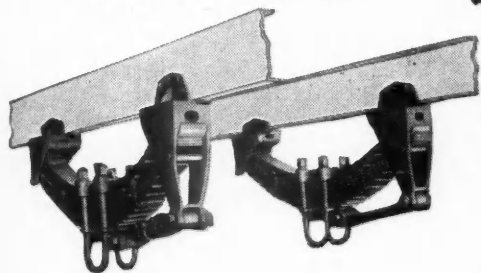
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Standard brakes for all
size axles.



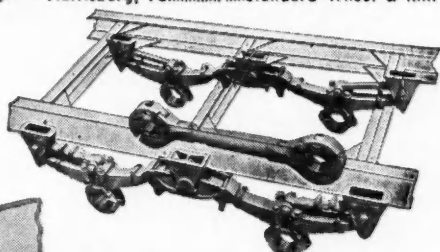
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Single axle spring suspension
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Tandem unit for dual axle assembly to
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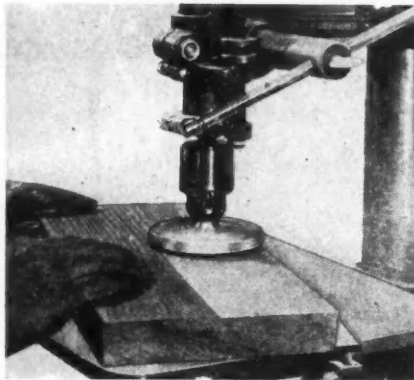
AXLES BRAKES FORGINGS TRAILER PARTS

New Products

(CONTINUED FROM PAGE 174)

P82. Rotary Sander

A new flexible type Rotary Sander has just been announced by the Barron Tool Co., Inc., Detroit, Mich. It provides a full 4 in. diameter and features a $\frac{3}{8}$ -in. thick sponge rubber pad bonded to an Alcoa Aluminum housing. A $\frac{1}{2}$ -in. centerless



ground hardened steel arbor is cast integral with the housing to permit use in any chuck, collet or adapter of $\frac{1}{2}$ -in. capacity.

The sander is designed for surface sanding woods and plastics in drill presses or for attachment to flexible shafts for sanding and removing paints and varnishes from floors, decks, hulls and fenders. It will finish flush with shoulders of workpiece. Its design provides a smooth finish with no evidence of waves, ripples, steps, or striations, according to the maker. Discs or striations, according to the maker.

Use Free Postcard for More Details.

P83. Fog Light

The No. 500 Fog Light, made by the Arrow Safety Device Co., Mount Holly, N. J., is manufactured with a stainless steel rim which is butt-welded in four places for extra strength. A stainless steel rim, the makers say, will successfully resist wear at the spot where the greatest abuse is received from dirt, pebbles, tar and other rough objects thrown up from the road. The No. 500 Fog Lamp is sold singly or in pairs, with clear or amber lenses.

Use Free Postcard for More Details.

Refueling Flagship



Refueling the 4200 gal tanks of its Douglas DC-6 Flagships is a major factor in carefully budgeted ground time, so American Air Lines selected this Davisbilt refueler which is said to be as modern as the plane itself

P84. Lift Truck Shifter

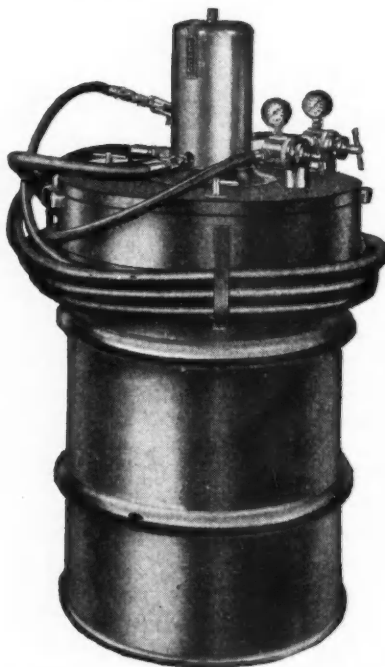
A new fork lift truck accessory, the Side Shifter, which permits the operator to pick up or deposit a unit load in an exact location without repositioning the truck itself, has just been announced by Towmotor Corp., Cleveland, Ohio. The new accessory provides lateral movement of a load, on forks or pallet, to either side. Through elimination of truck maneuvering often required in operations where loads must be positioned exactly, especially in stacking, the shifter is said to save time and effort and assures maximum use of available storage area.

Hydraulically operated through a double-acting cylinder controlled by a lever mounted convenient to the operator, the Side Shifter will move the carriage face and the forks a distance of $3\frac{1}{2}$ in. in either direction.

Use Free Postcard for More Details.

P85. Underbody Pump

Gray Co., Inc., Minneapolis, Minn., now has available an air-operated, low pressure pump which handles underbody sealers direct from original containers. The underbody pump is an adaptation of the Graco lubricant dispensing pump. An air motor with long, slow stroke insures even flow of material, with a minimum surge. The unit is instantly adjustable to fit full barrels of various heights.



The new pump will handle all underbody coating compounds which do not contain abrasives, acids or materials injurious to the pump or equipment. The Graco pump meets all specifications for adaptability and dependability, according to the manufacturer.

Use Free Postcard for More Details.

P86. Radiator Tester

Fischer and Potter Co., Hatboro, Pa., has developed a radiator flow rate testing device called the Flowrater which is said

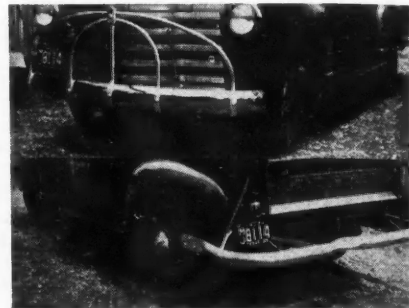
to show immediately the condition of the radiator.

The Magna-Bond Indicating Flowrater measures the instantaneous flow of water through the radiator, thus showing at a glance on the gage whether the unit is clogged with excess scale, sludge, grease or other foreign material.

Use Free Postcard for More Details.

P87. Bumper Guards

The new Smash-Hit Grille Guards, recently placed on the market by the Perry Co., Waco, Texas, are made for all sizes of trucks in the Chevrolet, Dodge and Ford lines.



The new Heavy Duty Rear Bumper with recessed trailer hitch is available for the $\frac{1}{2}$ -ton, $\frac{3}{4}$ -ton and the one-ton pickups for the three lines of trucks.

Use Free Postcard for More Details.

P88. New Body and Hoist

Designated as the "300" Series of Dump Bodies and the No. 827 Iso-Draulic Roll-A-Lift Hoist, these new additions to the Perfection line are designed for the most rugged type of service.

According to the manufacturer, the "300" Series Bodies are made in styles for every purpose. They are carefully constructed of 8-gage high-resistant sheet steel, heavily braced all points of stress. Body understructure is made of 4-in. I-Beam cross-bolsters and 5-in. I-Beam longitudinal sills, all securely welded together and welded to the body.

The No. 827 Hoist is designed for use with heavy-duty bodies. The upper surfaces of the two lift arms engage two pressure rollers mounted on the body. The design is such that at the beginning of the

(TURN TO PAGE 274, PLEASE)

Fruehauf Truck Tank



Streamlined truck tanks of 500 to 3000-gal capacity have been added to the Fruehauf Trailer Co. line. They are of high-tensile steel construction, designed to fit popular trucks

Where Seating Gets

ROUGH USE AND ABUSE



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—Thoreau



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New Products

(CONTINUED FROM PAGE 272)

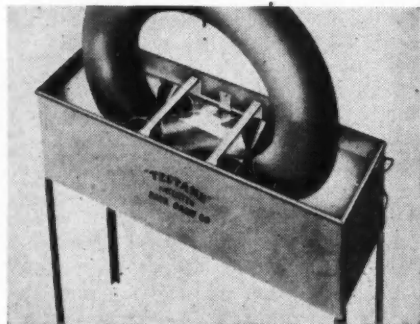
stroke, where the lift is heaviest, the greatest leverage is provided. Roll-A-Lift Hoists are available in sizes to lift full-loaded bodies of the largest capacity made.

No. 354 Body is designated as a super-duty, straight side type. Cross-members extend beyond sides of the body shell to support full length running boards and wide, triangular side braces. Standard sizes made in 2 to 12-cu. yd. capacities; dimensions increase in 6-in. steps up to 12-ft. length and 7-ft. width. Height is made to suit the desired capacity. Special sizes can be built to order by The Perfection Steel Body Co., Galion, Ohio.

Use Free Postcard For More Details.

P89. Tube Testank

The Testank is a tube tester made in 2 sizes, truck and passenger, which automatically detects the slowest leaks and eliminates dunking, according to Fair Oaks Co., Glendale, Calif. Basic reason is said to be the fact that tube leak areas are brought as close to the surface of the water as possible.



This permits pressure inside tube to overcome water pressures in tank at point of leak, thus instantly exposing the smallest leaks. A hinged carrier automatically stretches tube, exposing entire rim contact area and road contact area. Underwater electric light magnifies leaks.

Use Free Postcard for More Details.

First Wormgear

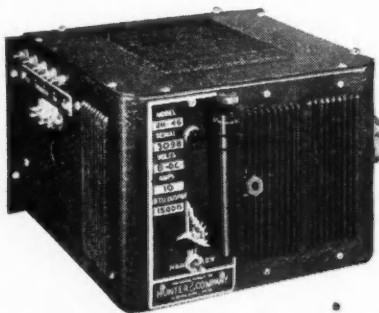


Said to be the first worm-gear truck built in America, this 1911 Pierce-Arrow was scrapped last month by its owners, the Iroquois Beverage Corp., after more than 30 years of service and a million miles of travel at the hands of Frank Heiser, 74, who was on hand to bid it farewell. Rated for 5-tons it often carried 10, but made only about 1.5 miles to the gallon

P90. Space Heater

Hunter & Co., Cleveland, Ohio, announces a new fully automatic gasoline burning heater for the heating and ventilation of truck cabs and small buses.

The compact heater, having a "Sealed-in-Steel" flame, is 7 in. x 10 in. x 10 in. in size and operates independently of the engine. It is spark ignited and thermostatically controlled maintaining desired temperatures in cold weather.



Fresh air is supplied by an air inlet tube that runs from the heater to the radiator grille.

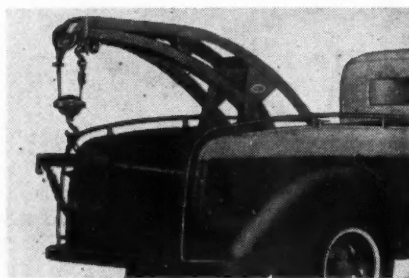
The new heater is installed in the cab exactly as a hot water heater and can be equipped to operate while the engine is not running, making it ideal for preheating of the vehicle.

Other models are adapted to engine preheating and cargo space heating requirements.

Use Free Postcard for More Details.

P91. Tow Crane

Marquette Mfg. Co., Inc., Minneapolis, Minn., announces a new Manual Tow Crane Model 140N. It features a two-speed winch with pressure lubricated roller and "Oilite" bearings for easier lifting. Low speed for hoisting and high speed for unspooling and taking up slack. Triple-action brake for full control of load with free running, controlled unspooling and positive locking with overrunning load brake.



All gears are completely enclosed. Planetary gear drive on single shaft provides safety with all gears carrying share of load. *Use Free Postcard for More Details.*

P92. New Electrode

The McKay Co., York, Pa., announces the addition of the M-4 shielded-arc welding electrode to the regular line of McKay-Rods, packaged in Handi-Cartons.

McKay M-4 Electrodes are adapted to all position welding of mild-steels. They produce neat, smooth beads and can be used to weld all gages of steel. The M-4

electrode is an all purpose electrode that operates equally well on dc straight polarity or on ac in all positions including vertically down. The quiet steady arc with low spatter is very easy to strike and maintain, thereby reducing operator fatigue and assuring better workmanship, according to the manufacturer.

These electrodes are packed in water and grease-resistant Handi-Cartons weighing 3½ to 5 lb per box depending on size.

Use Free Postcard for More Details.

P93. Valve Guide Puller

The Chicago Pneumatic Tool Co., New York, has added a new tool to the family of Pneu-draulic Pump-actuated automotive products, the CP Valve Guide Puller, designed to remove valves from Ford V-8 engines.

With this tool removal of frozen valve guides is said to be reduced to a matter of seconds. A slow, steady compressive force of over 10 tons presses out the guide easily. Hammering or prying is eliminated, the company states.

The pump weighs only 12¼ lb and is controlled by touching a throttle. A com-



pletely self-contained hydraulic pumping system, it can be carried from job to job and installed in a minute simply by attaching to any shop compressor air outlet.

Use Free Postcard for More Details.

P94. Safety Lens

The Safety Specialty Co., Inc., Mobile, Ala., has on the market a low cost safety signal used to clip to the headlights of a disabled vehicle to give a red warning flare.

Made of a waterproof and fire resistant transparent plastic shield, the lens is attached to the headlight with a suction cup. One model will fit any type vehicle. Price is \$1.00.

Use Free Postcard for More Details.

END

(Please resume your reading on P. 68)

Fast Cattle Run



Mexical Transport Co., of Phoenix, Ariz., recently purchased three of these Cummins-diesel-powered international "western" models for its 400 miles cattle run to Los Angeles